

THE ARCHITECTURAL RECORD

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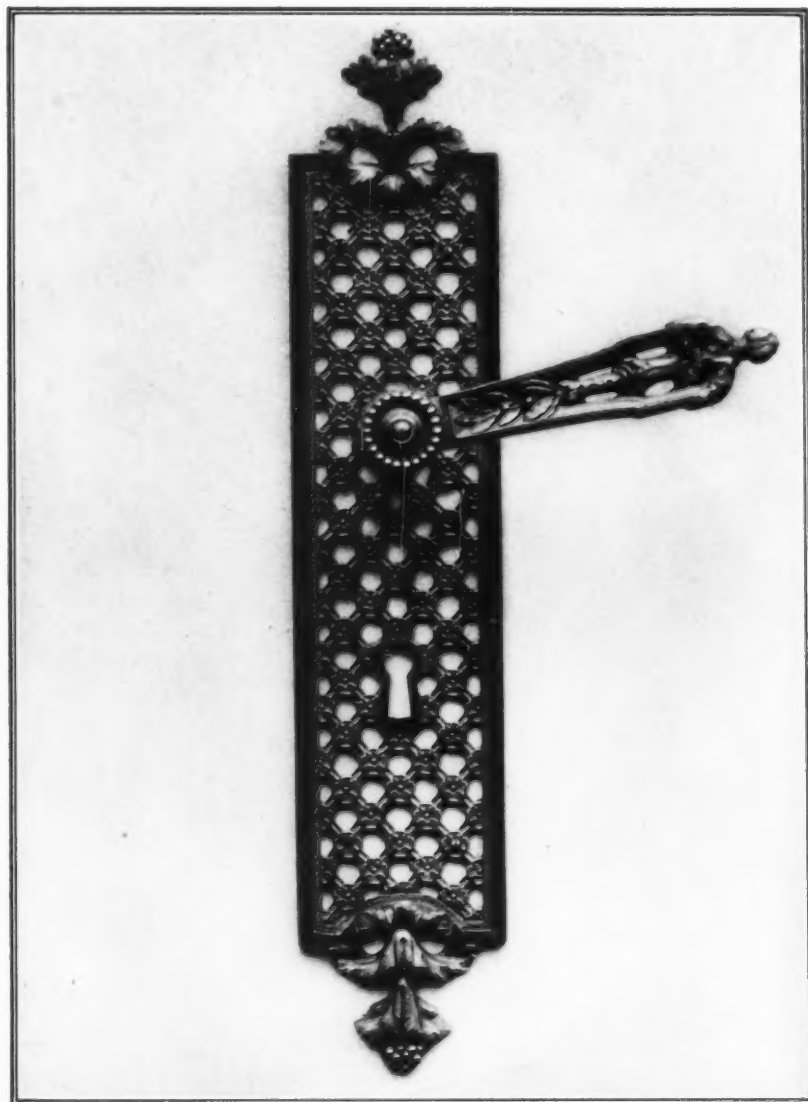
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The  
**Architectural Record.**

VOL. XVI.

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No 2.

**THE WORK OF RUTAN & RUSSELL, OF PITTSBURG.**



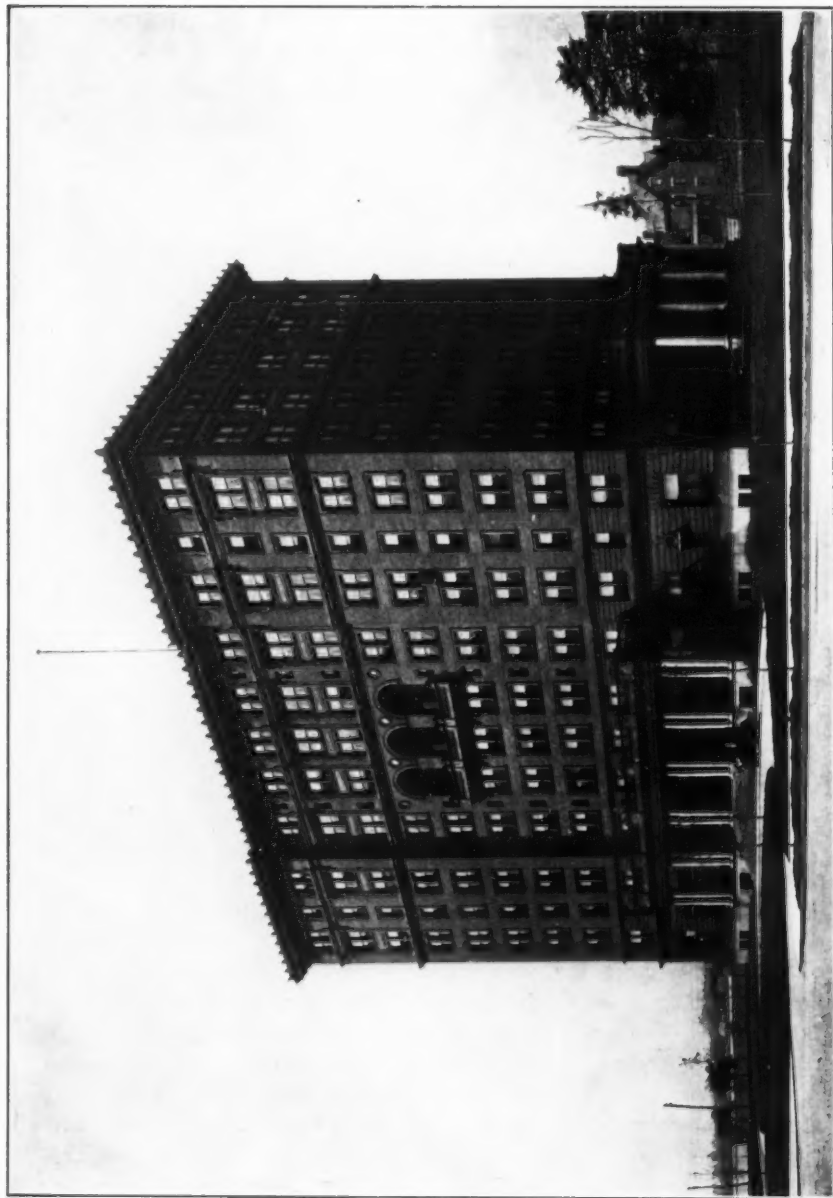
NOTHING is more certain than the Western march of empire. The broad waters of the Pacific acted as an impassable barrier to further Eastern expansion; humanity found more ample scope in the West for the development of its culture; and the steps of human progress can be noted, not alone in established centres, but by the creation of new centres, always Westward.

The modern movement in architecture, as observable in the United States, has a number of characteristics of its own. It looks both ways, both forward and backward. It has eyes upon the West and eyes upon the East. It is in no sense spontaneous, although the soil on which it is planted is new and barren of types on which it may model itself. On the whole, this condition is a disadvantage. Architecture is not a spontaneous art, but one of culture and development. It rests on models and achievements. Its progress is achieved on what has been accomplished; each new effort, like the courses of brick or stone in a building, depends on the solidity and actuality of what has gone before.

But America has nothing of its own in architecture that can, in any practical way, serve as a basis for modern use. The American architect, seeking for inspiration and suggestion, cannot scan the structures of his own land, but must hark back to the buildings of Europe, new and old. His originality is simply the re-adaptation of an art that flourished under conditions different from his own to the newer ideals of his Western home. It is his distinction that, under such circumstances, his work, while seldom possessed of the qualities of real greatness and real originality, is nevertheless highly distinctive, highly individual, admirably suited to its environic conditions, and often of very real interest.

It must be entirely patent that, save when the structures of other lands are frankly copied, our designs are our own. It is true

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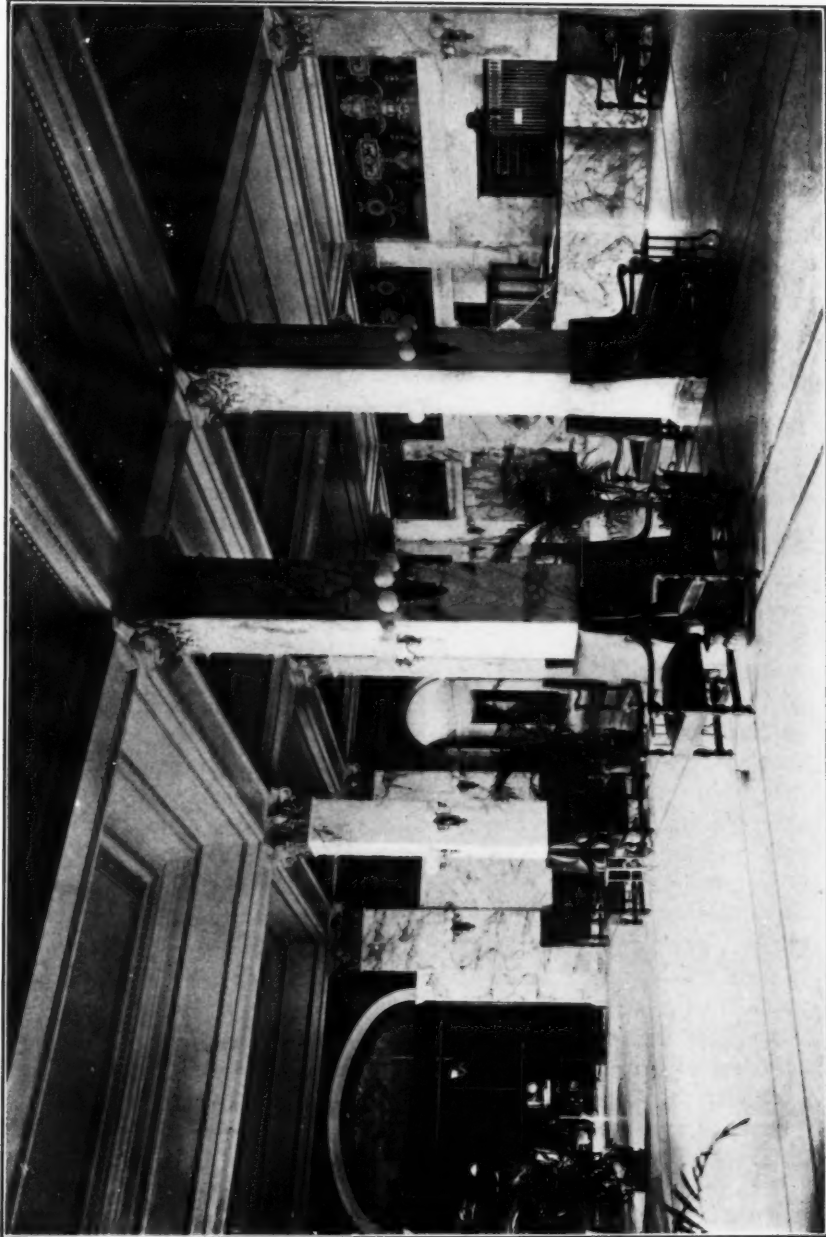


HOTEL SCHENLEY.

Rutan &amp; Russell, Architects.

Pittsburgh, Pa.





THE LOBBY—HOTEL SCHENLEY.

Rutan & Russell, Architects.

Pittsburgh, Pa.

enough that when some thoroughly American designs are called to mind this distinction is but a sorry one, and gives small comfort to the historian; but, taken as a whole, American buildings have qualities and often have character which stamp them indelibly as American, even though this result be reached only by exclusion. This, of course, is true of all national architecture. The buildings of England, of France, of Germany, to limit the list, have each essential qualities that mark them as the products of these various nations. The phenomenon is by no means peculiar to our own time or our own land; the single point of interest, so far as we are concerned, is that, without any models of our own, and with the necessity of basing our work on the achievements of other people, we should have given to our architecture qualities so marked and so personal.

But if we have no architectural models of our own on which to base our architecture, we have architectural schools and traditions in designing and methods, due to the strong personality of individual architects. The educational influence must increase each year, because its utility has long since been demonstrated beyond peradventure of contradiction. It is quite immaterial that the highly interesting and often very original architecture of our early history was largely produced by untrained men. Untrained they were, as training is now understood; but even these early architects did not labor without such aids as were available to them.

Architectural education has a double value, in not only producing men grounded in the elements of their professional work—for the most advanced schools do no more than this—but in setting up and diffusing a uniformity of architectural taste and ideas throughout the entire length and breadth of our country. No other nation has a larger area dominated by a single civilization; and in no other land are the demands made upon the architect so widespread and so uniform. It is true the United States embraces climates of varying kinds; the needs of California are not the needs of New York and Pennsylvania; yet the area in which our architectural needs are practically uniform is without parallel in modern times.

Architectural education is rapidly breaking down whatever barriers nature may have set up in matters of climate and space. Architectural education, architectural knowledge, the increase of an interest in architecture among the people, the prolificness of architectural periodicals, the amplitude of architectural information, all help towards the same end, albeit the supply is sometimes in excess of the demand. Yet positive as this movement is, it may be questioned if each centre in the United States has not an architectural quality of its own; not, indeed, so marked that we can refer each

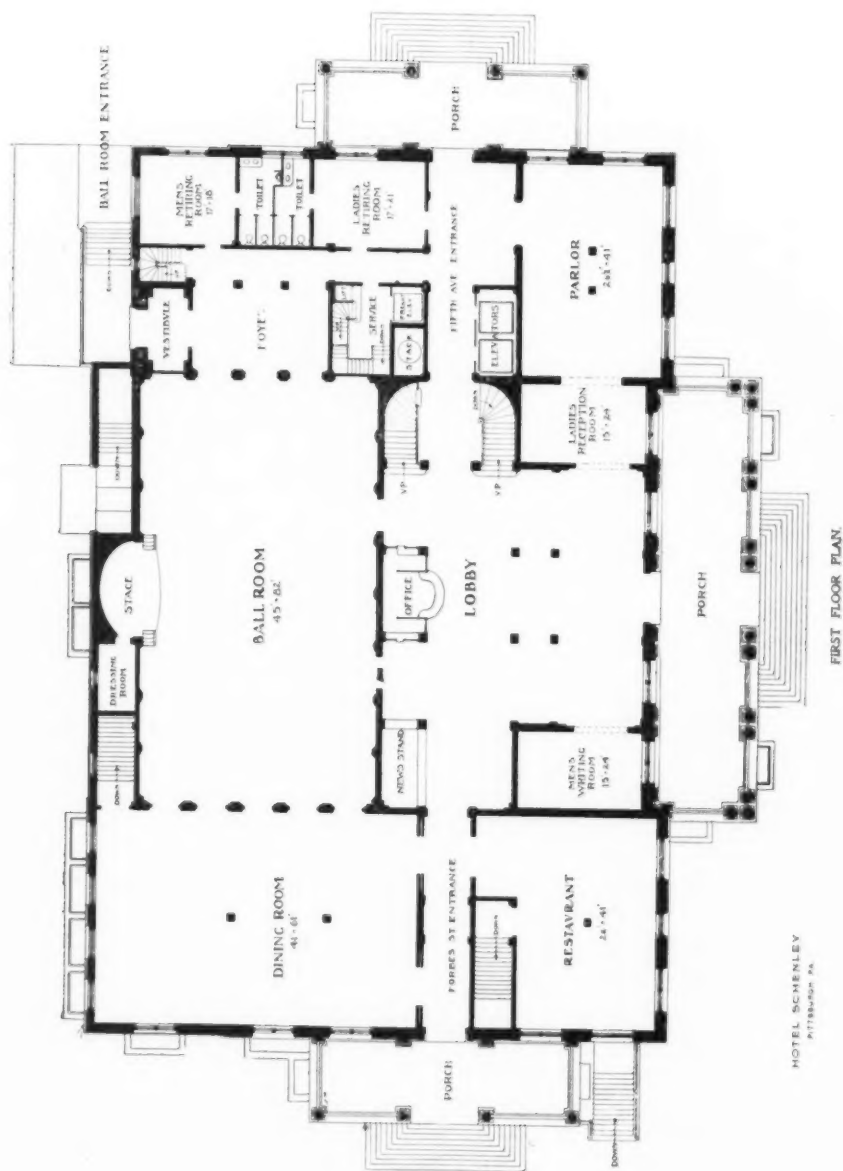
building to its locality by mere inspection—our intercommunication is much too close and intimate for that—but still so evident to the observer saturated with the architecture of the East, that the architecture of the West can truly be said to have a feeling all its own, a character that adopts itself to its own locality, an art that is still architectural, but architecturally Western.

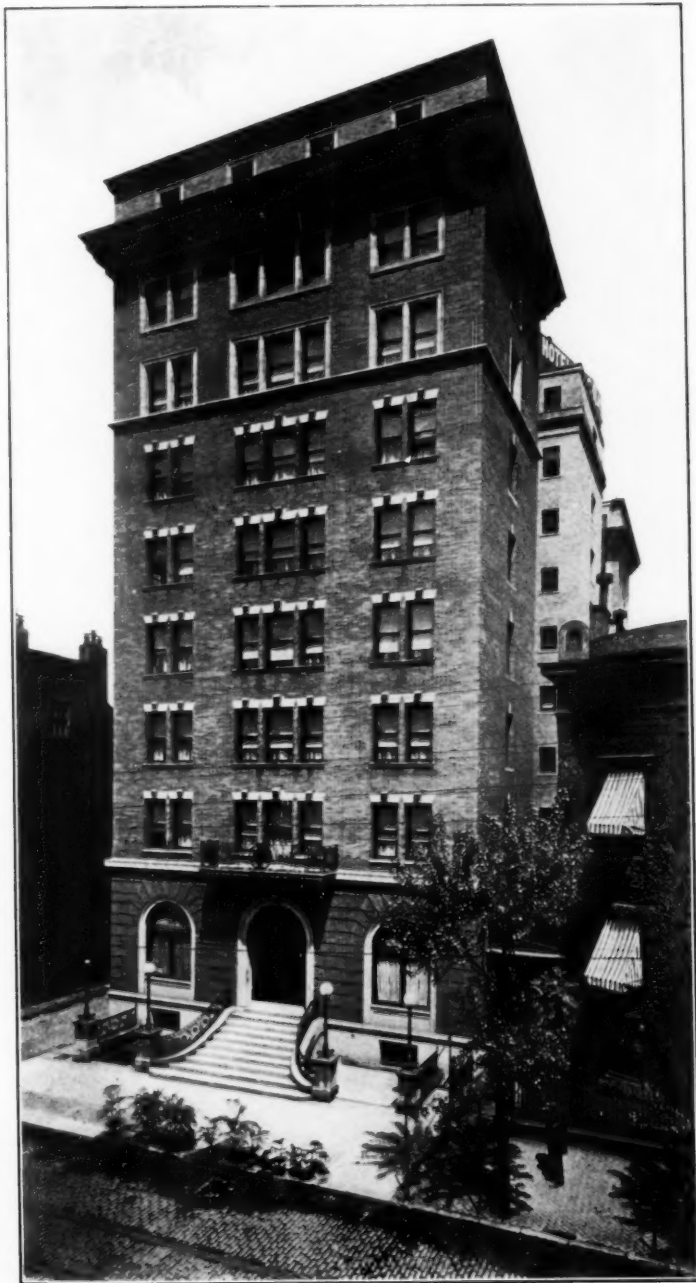
For the origin of our architecture is the East. More costly buildings and more extended enterprises are to be found in the East than in the newer West. That the West is rapidly becoming a competitor of the East in things architectural is demonstrated by the proud pre-eminence of Chicago, which in not a few architectural matters is able to give lessons to the older communities on the Atlantic coast. But, like all progress in America, architecture moves Westward, and at each great centre has established a vogue and adopted a model which, if not entirely its own, is much unlike that of any other community.

In examining the work of any architect or group of architects whose work has been largely local, some quite distinctive aspects will be uncovered which have, it not the earmarks of locality, certain aspects which mark them as belonging to a special locality. The work of Rutan & Russell, of Pittsburg, may well be taken as an illustration of this thought. One does not look for the same interpretation of architectural problems in Pittsburg that one may find in New York. While some very extensive architectural operations have been carried on in Pittsburg in recent years, the scale, as a whole, is not the scale that obtains in the larger Eastern cities. The architectural methods and ideas will be much the same as in the East, but the interpretation will not be so grandiose; the decoration will not be so elaborate; the great house will not be quite the same kind of a great house that the East will offer.

The Hotel Schenley admirably illustrates these points. It is at once the largest work of Messrs. Rutan & Russell, and the most considerable hotel in Pittsburg. It is a building well thought of and much admired in Pittsburg, and this is quite natural, considering the fact that it has given to that city a hotel of the first rank in size, in a word, a thoroughly modern hotel. The requirements of such a structure are well known, and are summed up in the one word, completeness. There must be a place for everything, and everything must be arranged with absolute convenience.

The exterior of the Hotel Schenley has been treated in an exceedingly direct and simple manner, and the architects have achieved a very great success by following this method. A slightly recessed centre is buttressed by two end wings projecting but slightly beyond the central line. These wings are so large that they are in no sense corner pavilions, but essential parts of the





Pittsburgh, Pa.

HOTEL LINCOLN.

Rutan & Russell, Architects.

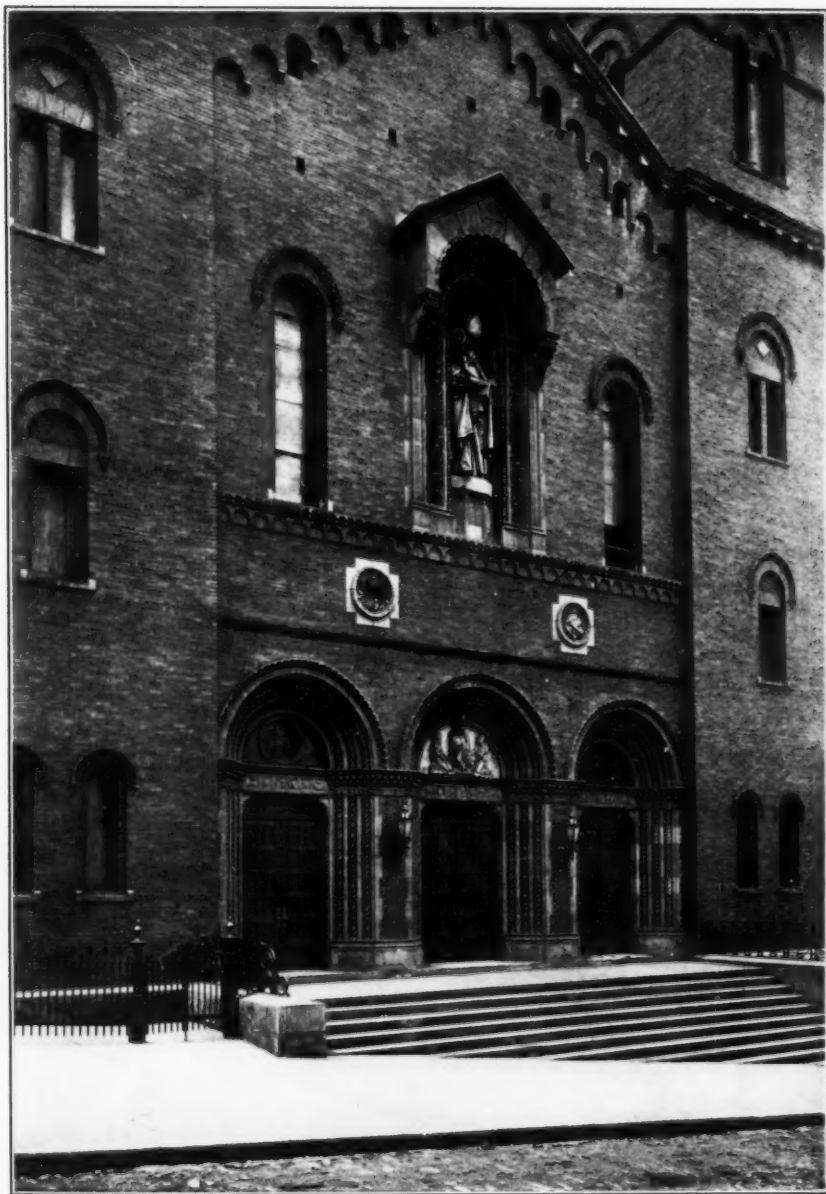


Pittsburgh, Pa.

S. AUGUSTINE'S CHURCH.

Rutan &amp; Russell, Architects.





DETAIL OF S. AUGUSTINE'S CHURCH.

Pittsburgh, Pa.

Rutan & Russell, Architects.



THE RESIDENCE OF THE HON. B. F. JONES.

Sewickley, Pa.

Rutan &amp; Russell, Architects.



THE RESIDENCE OF THE HON. B. F. JONES.

Sewickley, Pa.

Rutan & Russell, Architects.



WATER-TOWER—RESIDENCE OF THE HON. B. F. JONES.

Sewickley, Pa.

Rutan & Russell, Architects.

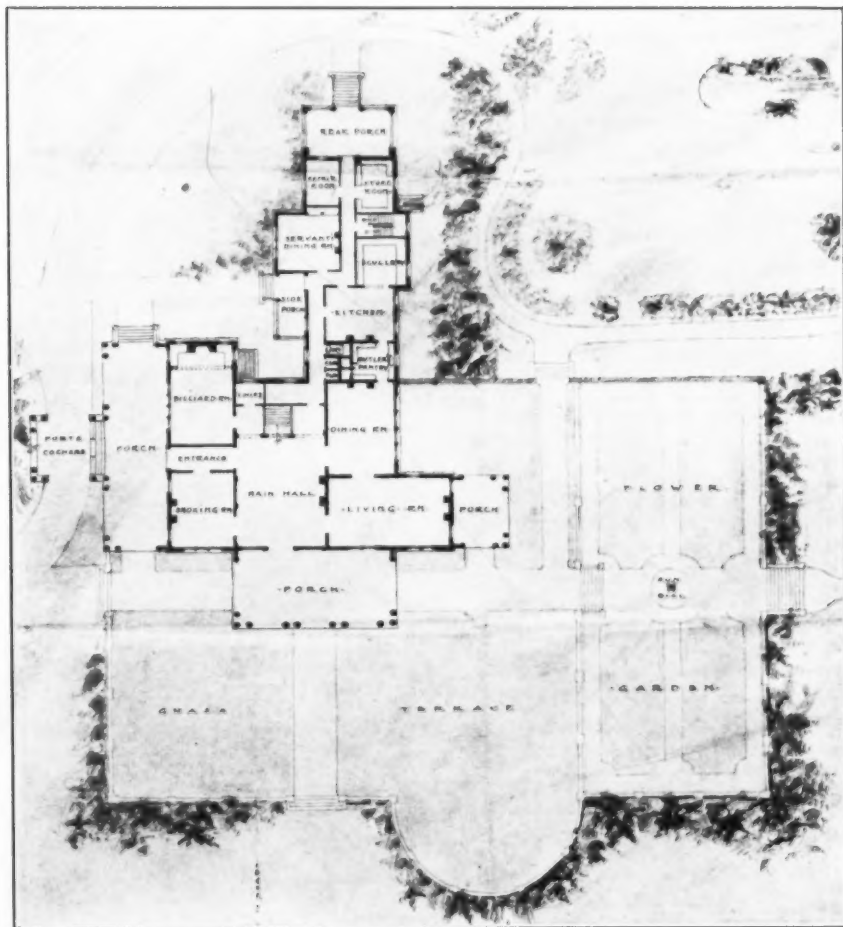


INTERIOR VIEWS IN THE RESIDENCE OF THE HON. B. F. JONES.

Hall and Billiard Room.

Sewickley, Pa.

Rutan & Russell, Architects.

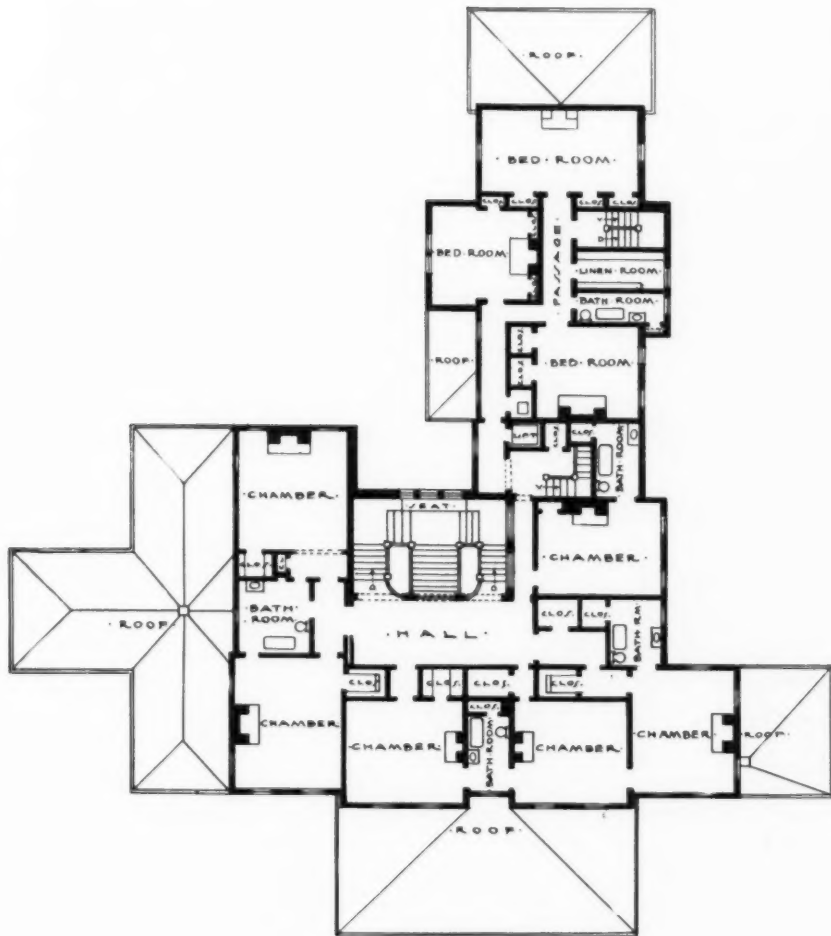


GENERAL PLAN OF THE RESIDENCE OF THE HON. B. F. JONES.

Sewickley, Pa.

Rutan &amp; Russell, Architects.





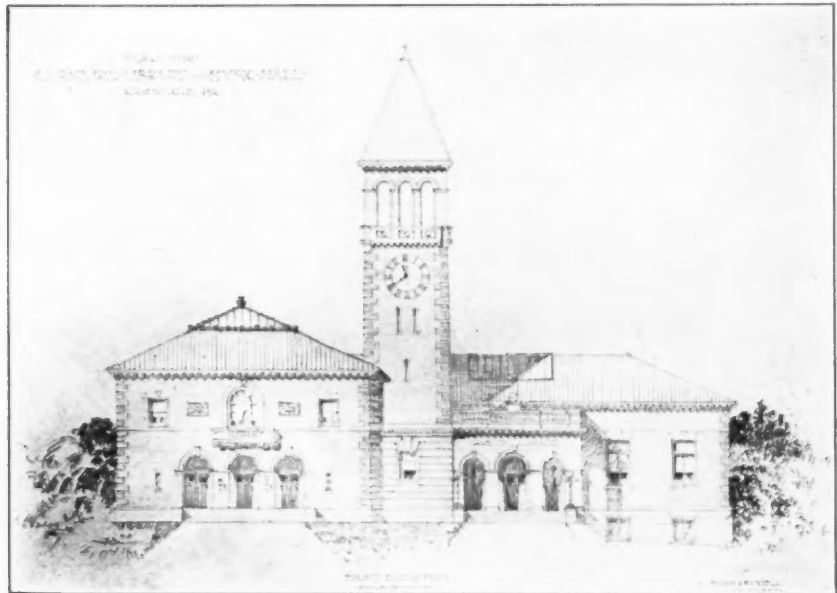
SECOND FLOOR PLAN  
SCALE - 1/4" = 1'-0"

RESIDENCE OF THE HON. B. F. JONES.

Sewickley, Pa.

Rutan & Russell, Architects.

building, with sufficient variety of surface to break up a front that, without such a device, might be dull and uninteresting. The wall treatment is plain almost to severity, yet rightly so, for the architects have wisely recognized the fact that dignity, in a structure of this size, can only be had through simplicity. The windows are arranged chiefly in pairs, their rather decidedly marked frames offering the single decorative feature of the superstructure. The crowning member, which consists of two divisions, is somewhat un-



DESIGN FOR CARNEGIE LIBRARY AND MUSIC HALL.

Carnegie, Pa.

Rutan & Russell, Architects.

necessarily marked, and an emphasis to the centre is given by the three arches in the sixth and seventh stories.

The hotel stands in spacious grounds, and has, therefore, a character and placement quite different from the usual city hotel placed on a crowded street. The non-metropolitan character is further enhanced by the porches with steps, so that the immediate surroundings and approaches are quite unusual in large city hotels of this class. A structure of this size and height appears somewhat incongruous in such a situation; but this is a circumstance over which the architects exercised no control. They have certainly produced a dignified and stately edifice, and, that done, nothing more remained to be accomplished.

The plan of the hotel discloses some peculiarities of its own. A

spacious lobby occupies the centre of the building; on one side is a ladies' reception room; on the other a men's writing room. Beyond, to the right, is a parlor; on the left is a restaurant. Corridors to the side porches and entrances cut off this front portion of the building from the other parts. Immediately behind the lobby is the ball room, which has its separate entrance on the rear to the right. On this side is a foyer and retiring rooms for men and women; the opposite corner of the building is filled with the dining



RESIDENCE OF EDWARD O'NEILL, ESQ.

Sewickley, Pa.

Rutan &amp; Russell, Architects.

room. Here, again, is a generous disposition of area, the ball-room separated from the other parts of the hotel, which, in their turn, are excellently arranged and spaced. The New York architect, with his ball-room on upper floors, and expensive and crowded construction, must envy these Pittsburg fellow-craftsmen in their opportunity to plan so broadly on the ground floor. As the ball room does not extend above the second floor, the plan of the upper parts of the hotel presents the form of a double T, of which the inner arms are much the longer. The plan of the upper floors scarcely calls for comment. With the exception of a ladies' parlor in one corner of the second floor they are practically identical, and consist of bedrooms with and without bathrooms, and arranged singly and en suite. Each wing has its corridor lighted from either

end; the corridor in the centre of the building is lighted from these halls. It is a plan eminently simple and direct, and, in fact, the only plan which could be followed in a building of the dimensions and shape of the present one.

The straightforward treatment that distinguishes the Hotel Schenley is characteristic of the Hotel Lincoln. This is a building of a very different type, standing on a street, and with interior courts that are unavoidable in deep buildings of comparatively moderate frontage. It is nine stories high; but the top story,



THE EDGEWORTH CLUB.

Sewickley, Pa.

Rutan & Russell, Architects.

being above the heavy cornice which is the single enrichment of the front, does not count in the design. The entire façade is bare of ornament, unless the rusticated treatment of the first story be so considered. The window sills and caps, the grouping of the windows, and a simple string two stories below the cornice, constitute the sole features of the front. Yet it is remarkably good and strong, manifestly the work of architects who know how to treat a simple front simply, and who know how to make the most out of a problem that offers little opportunity.

A true appreciation of the value of wall surfaces appears to be characteristic of the work of Rutan & Russell. Their two hotels

show it in a very marked degree, and the same can be said of their S. Augustine Church. It is built of brick and terra-cotta, and is a very careful study in these two materials. The design is Romanesque, with strong Rhenish feeling in the shape of the towers and the octagon on the crossing. There is no surface decoration except in the string courses over the main portals; everything else is rigidly severe, the ornament being confined to window hoods and the characteristic row of small arches below the cornices. Interest is thus concentrated upon the portals, with their delicate



RESIDENCE OF E. H. UTLEY, ESQ.

Pittsburgh, Pa.

Rutan &amp; Russell, Architects.

twisted columns and arch mouldings of the same form. These portals are very well done, and give quite the needed interest to a design that, otherwise, must necessarily be plain almost to severity. The large niche containing the statue of S. Augustine immediately over the central doorway is hardly so happy, but the insertion of so large a statue in a conspicuous place in a front is an extremely difficult problem, and perhaps it could hardly have been solved otherwise than here.

The Phipps' Training School is another building in which the same feeling for surfaces and restrained treatment in general has been followed. The doorways are again properly elaborated, but entirely in harmony with the quiet treatment of the rest of the de-



RESIDENCE OF W. E. REIS, ESQ.

(Exterior and Main Hall.)

New Castle, Pa.

Rutan &amp; Russell, Architects.



sign. The building is a simple one of two stories, the roof, which forms the third story, being lighted with large dormers whose carved consols are, with the ornament of the doorways, the single bits of ornaments in the fronts. Properly speaking, the building has no cornice; but the string course at the top is surmounted by a low piece of wall on which the dormers rest, and behind which the base of the roof is concealed. A piece of wall is here transformed into an ornamental feature, which satisfactorily fills the function of a crowning member, and does it very admirably.

The building for the Chartiers Trust Company is a structure of a very different type, yet it may be referred to here. Built in a small town and for a financial institution of comparatively modest resources, it is naturally a building of moderate size. So much space is here given to windows that the wall hardly amounts to more than an enclosure for the window frames. The classic portal, with its entablature and pediment, is, however, entirely unrelated to the other parts of the design. It is an interesting little structure, on the whole, and yet it has a family likeness to many other structures of a similar size which have appeared quite numerous throughout the country in the last few years.

The demands made upon a busy architect by the exigencies of modern practice are so varied that except in a few occasional instances it is impossible to look for uniformity of ideas and methods in the work of any one man or group of men. This is especially true of domestic architecture, which is so largely influenced by the taste and predilection of the owner and by the necessarily varying conditions of cost and site. It is no criticism of Rutan & Russell to remark of their domestic work that it offers a very decided range of styles and forms. The same may be said of the work of most architects, and is as much a truism as to point out that the utmost variety exists in domestic architecture as a whole, since houses erected for different persons by different architects may be expected to exhibit a corresponding difference in design. A brief survey of some of the more important houses built by this firm will make clear their achievements in this very important branch of architecture. That most of these are country or suburban residences but emphasizes the good fortune of the architects in having houses of this sort to build. That not a few of them are houses of considerable cost is a further advantage. No house is easy to design, easy in the sense of being told off by rule of thumb; but the designing of suburban houses is hedged in by none of the rigid requirements that surround the designing of the city house. The suburban house has at least air and space, and offers many more opportunities for individual treatment than the city house, which, in point of view of external design, is often

nothing more than a piece of wall, with the very marked disadvantage of having no relationship with the adjoining wall pieces.

The house of the Hon. B. F. Jones, at Sewickley Heights, is a country residence of large size. It stands in the midst of grounds which, while ample, are not excluded from the scrutiny of nearby neighbors. It is a large house, generous in size, standing in large grounds, and with agreeable appurtenances of subsidiary buildings. Three sides of the lower story are almost completely masked by broad porches, to one of which is prefixed a portecochère. This floor is of brick; the upper is of half-timber work,



RESIDENCE OF GEO. W. McCALLAM, ESQ.

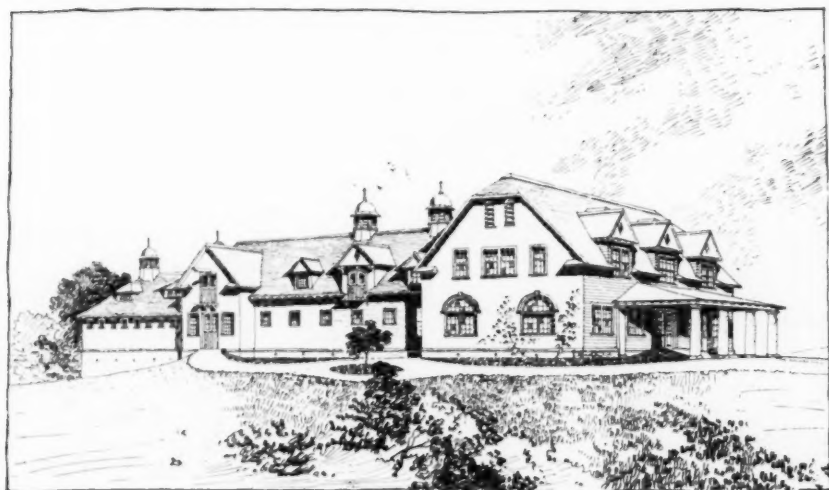
Pittsburgh, Pa.

Rutan & Russell, Architects.

with gable ends, which give a very happy variety to the roofing outlines. It is an ample country home, so large that nearly half of the ground floor is given up to the kitchen and service rooms; yet it is eminently "homelike" in feeling, perhaps the highest praise that can be given to any house.

The residence of Mr. W. E. Reis, at New Castle, Pa., is a structure of very different type. The picturesque English style of the Jones house here gives way to Colonial models. The house is built wholly of brick, with a spacious porch on the main front and the inevitable portecochère on one side. The corners are given a pilaster-like finish by Ionic capitals, and a similar device supports the small central pediment on the main front. As in much of the best work of Rutan & Russell, there is little ornament, but the

walls are strongly treated, and the whole exterior is characterized by a fine dignity. As in most large modern houses, the interior is richly treated. The architect who is called upon to build a large modern house is no longer content to turn it over to the occupant with plain walls and the slightest of structural decoration. The interior of the house now calls, and rightly calls, for elaborate study by the architect, and Messrs. Rutan & Russell offer no exception to what is now the established custom in all domestic work of some size. The main hall of the Reis house is an elaborately designed room, with a beamed ceiling, ornamental "grand" stairway, and supporting columns. The oval dining room is panelled through-

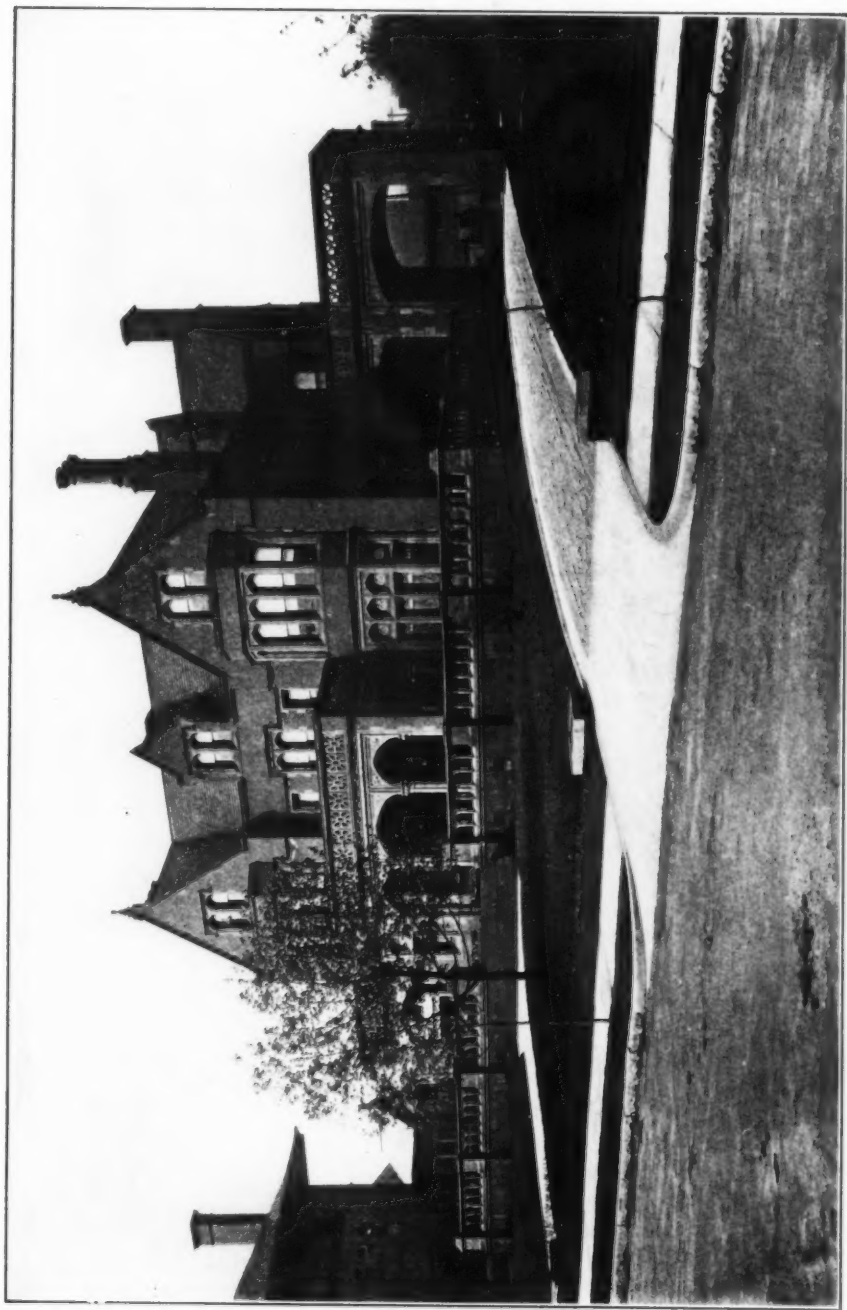


STABLE OF THE COUNTRY CLUB, OF PITTSBURGH, PA.

Rutan &amp; Russell, Architects.

out, with closets let into the walls, and panelled pilasters carrying the carved cornice.

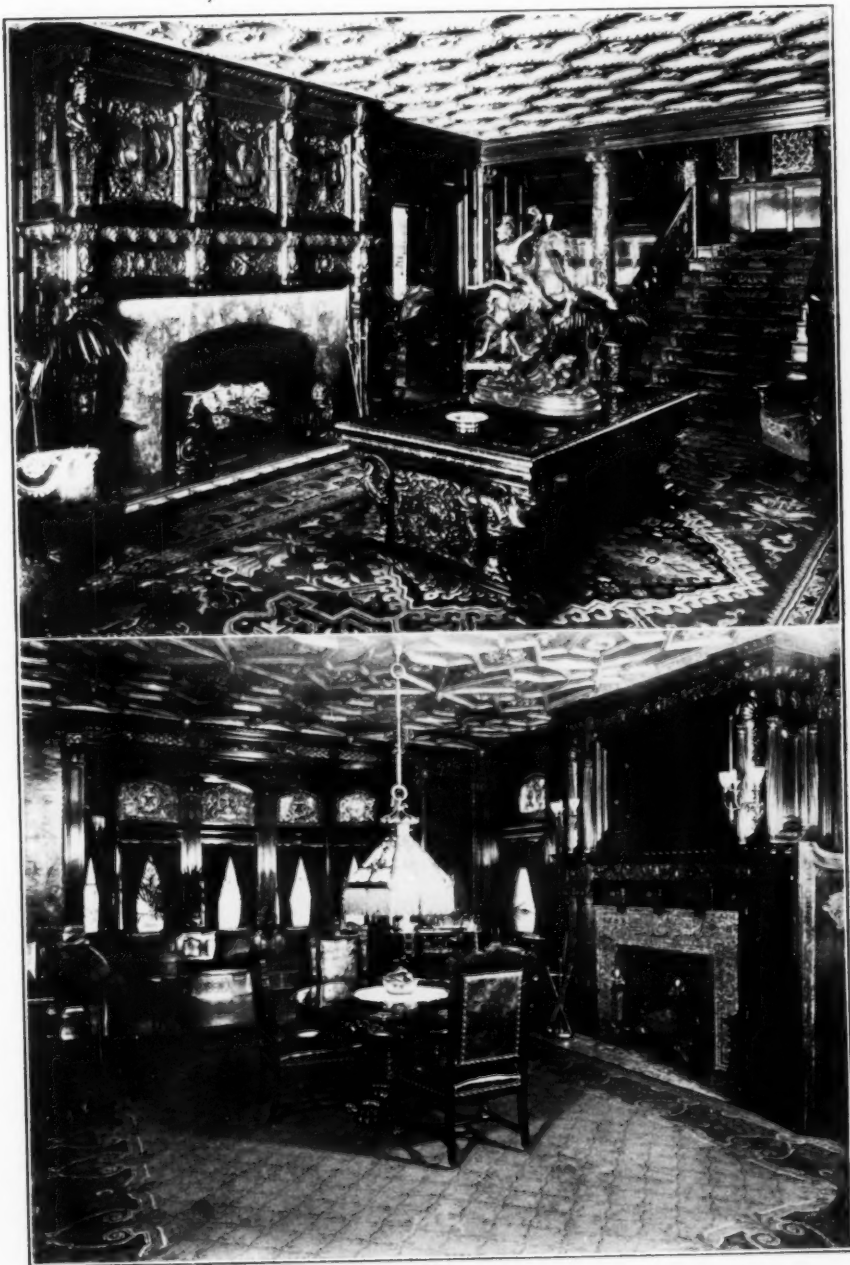
The house for Mr. W. H. Rowe, in Pittsburg, is of a different type, although standing in grounds spacious enough to give it suburban character. It is built wholly of brick, with brick porches and porte-cochère. The main front has two gable ends, with large bow windows. But the architects' feeling for concentration of ornament is further illustrated by the general severity of every part except the spandrels of the main arches of the front porch and the pierced balustrade of the two porches. The sobriety of the exterior, however, hardly prepares one for the gorgeousness of the interior, although the size and character of the exterior directly suggests that the interior must have some special importance. No part of the main hall is without decorative treatment.



RESIDENCE OF W. H. ROWE, ESQ.

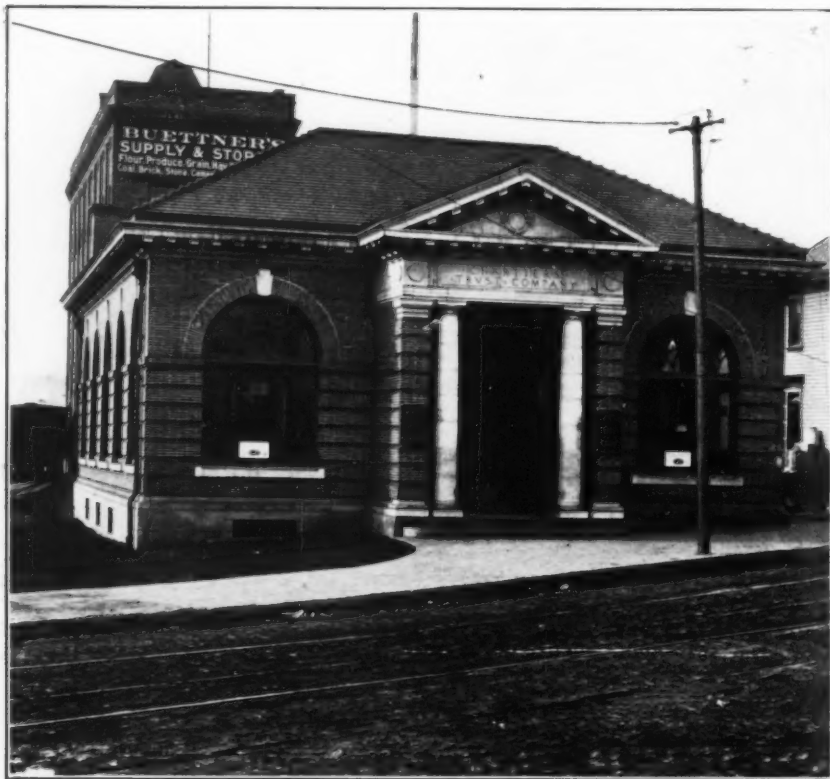
Rutan &amp; Russell, Architects.

Pittsburgh, Pa.



INTERIORS IN THE RESIDENCE OF W. H. ROWE, ESQ.  
Pittsburgh, Pa. Rutan & Russell, Architects.

The mantelpiece is most elaborate; the ceiling is in high relief; even the columns which support the stair space have their own rich dress of surface decoration. The dining room likewise has a ceiling in decorative relief, and is supported by panelled walls and elaborate mantel. This enrichment of the interior, however, is more a tendency of the times than the characteristic work of any architect. These interiors are more interesting as highly finished



CHARTIERS TRUST CO. BUILDING.

McKees Rocks, Pa.

Rutan &amp; Russell, Architects.

rooms than characteristic examples of the work of these Pittsburg architects.

Another version of the old Colonial is the house of Mr. Edward O'Neill at Sewickley. It is architectural parts—the windows let into ample wall space, the porches, the high sloping roof, the dormer windows—which give character and distinction to this fine house. The house for Mr. James Todd, in the same suburb, is built of stone. A stone wall encloses the terrace and porch, and again

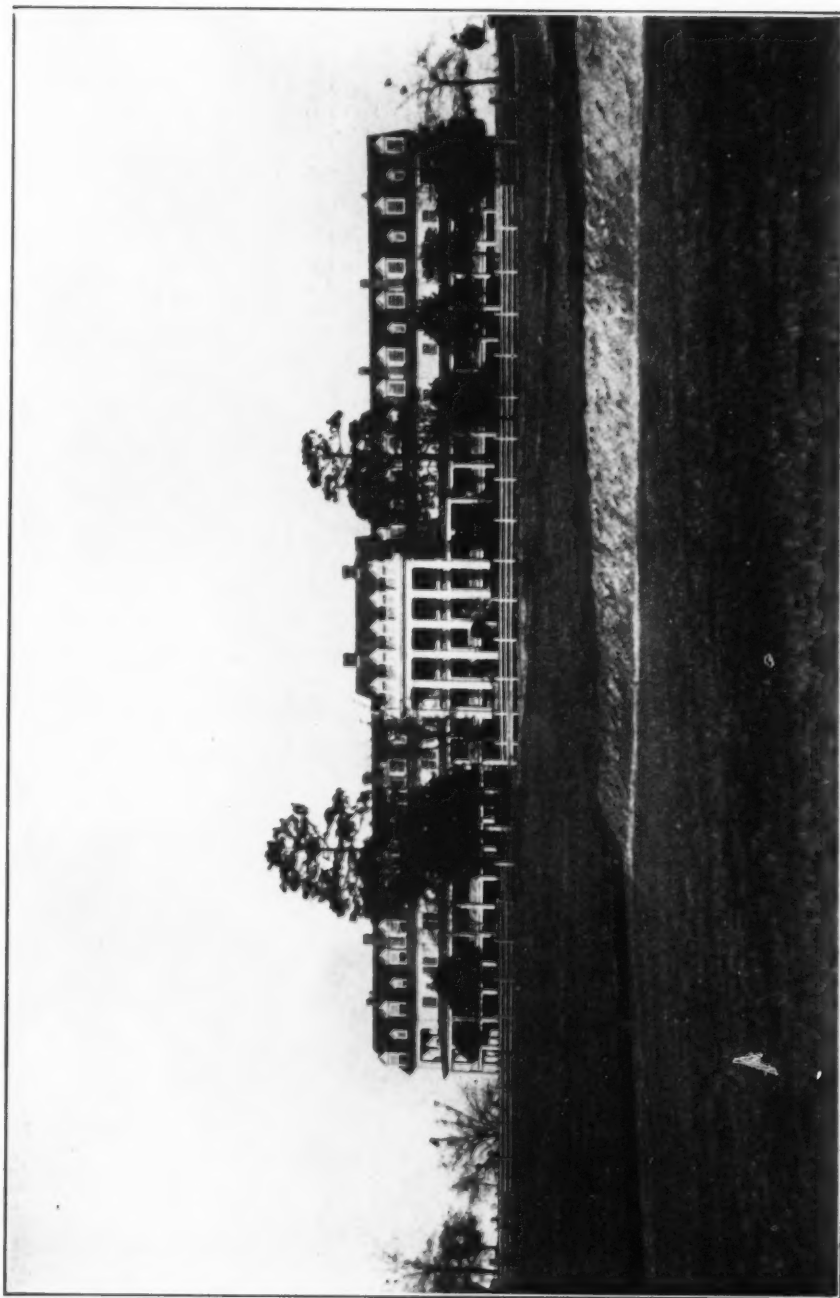




INTERIORS IN THE W. H. SCHOEN RESIDENCE.

Pittsburgh, Pa.

Rutan & Russell, Architects.



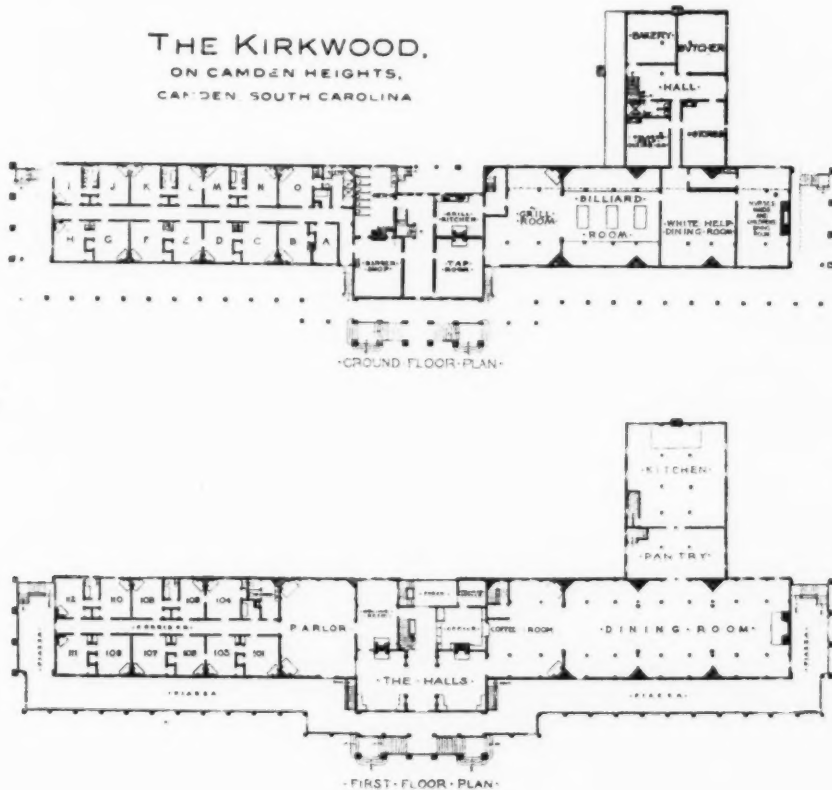
THE KIRKWOOD.

Rutan & Russell, Architects.

Camden, S. C.

there is the dependence on materials alone for effect, for of ornament there is none at all.

The house of Mr. E. H. Utley, in Pittsburg, has a pleasant suburban air, as have many houses built in the non-crowded portion of our growing cities. The first floor is of stone; the upper of half-timber work; the whole effect is picturesque. Much more modest than any of these houses is that for Mr. George E. Mc-

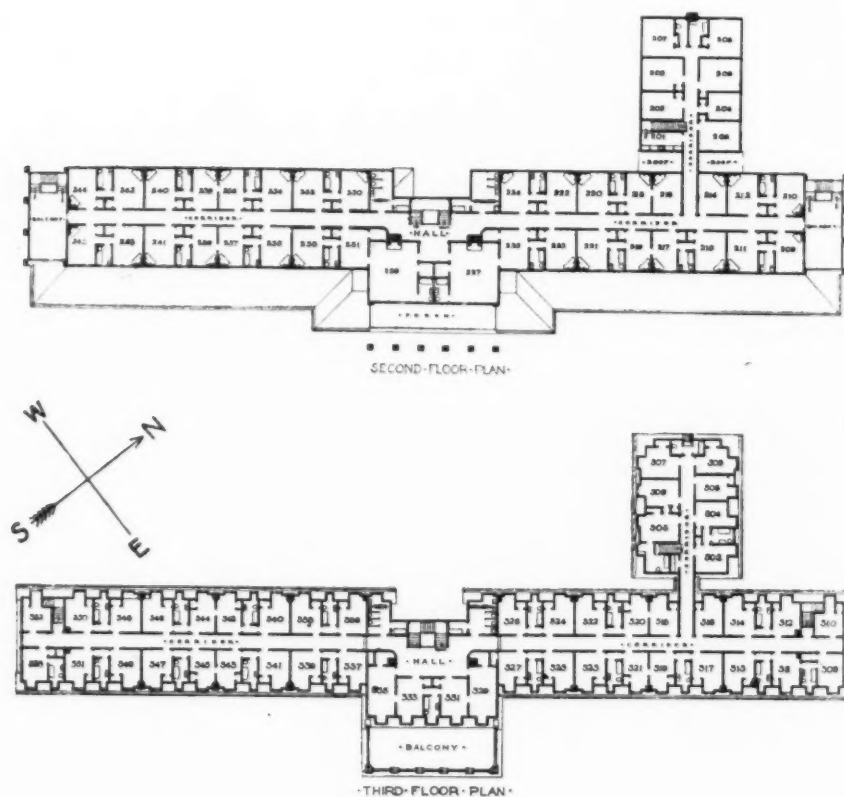


Callan, also in Pittsburg. It is hardly more than a cottage; the lower story in brick is surmounted by a gambrel roof in shingles; it is an interesting study in the designing of small houses.

The Edgeworth Club of Sewickley is a building that, in some aspects, might be mistaken for a comfortable country home. This, of course, is exactly what a country club is intended to be, and very successful and good the present example is. The building is shingled throughout, and is an interesting study in structural form,

since of ornament, as it is generally understood, there is none at all.

Is it possible to draw some general conclusions from the work of Messrs. Rutan & Russell from this hasty review of some of their more important work? It is well known that they are among the leaders of their craft in Pittsburg. It is apparent from what has been said, and from the illustrations which accompany this article,



THE KIRKWOOD.

Camden, S. C.

Rutan & Russell, Architects.

that their work has embraced some of the largest structures in their own city, and has well covered the wide range of subjects attained by all architects of prominence. Excellence of workmanship is perhaps the most notable characteristic of all these designs. Sobriety of treatment is another point in their favor. The building of buildings as buildings, of obtaining effects of form and shade through constructive materials, is clearly enough their most indi-

vidual point. This in itself is so rare and unusual, and the results obtained are so generally satisfactory, that special importance should be attached to it.

How far their art may be characteristic of Pittsburg is a more delicate question. It is certainly not provincial and certainly not Western. It compares most favorably with work of similar cost and size erected elsewhere. No doubt, had the Hotel Schenley been erected in New York it would have been more grandiose in



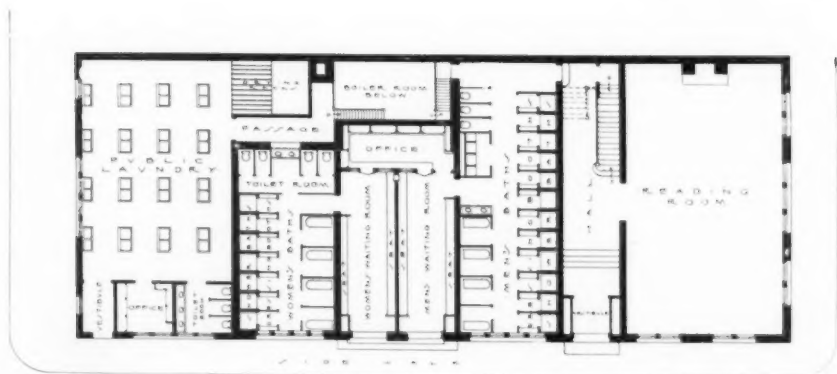
THE PHIPPS TRAINING SCHOOL.

Allegheny, Pa.

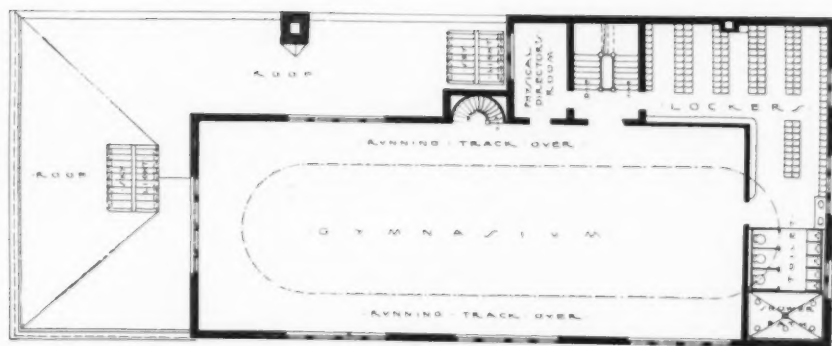
Rutan &amp; Russell, Architects.

design or more elaborately treated with ornament. But it would not, because of that, have been a better hotel, nor one better adapted to the requirements that might be demanded of it. But, taking all this work as a whole, it is evident that Pittsburg has reason to be completely satisfied with the standard set by buildings which so thoroughly testify to the strength and ability of their creators.

*Barr Ferree.*



FIRST FLOOR PLAN  
SCALE 1/8" = 1'-0"



SECOND FLOOR PLAN  
SCALE 1/8" = 1'-0"

PLANS OF THE PHIPPS TRAINING SCHOOL.

Allegheny, Pa.

Rutan & Russell, Architects.





THE NEW HOTEL ASTOR.

Long Acre Square, New York City.

Clinton & Russell, Architects.

## ARCHITECTURAL REFINEMENTS IN EARLY BYZANTINE CHURCHES AND FRENCH CATHEDRALS.\*



IN the Architectural Record for July-September, 1896, Vol. VI., No. 1, was published an essay on "Optical refinements in mediæval architecture," which was followed by a series of six papers under various individual titles, but all relating to the same general subject (the concluding paper of this series was published in Vol. VII., No. 3, for 1898).

These papers furnished the report of an investigation which had been undertaken by the writer under the auspices of the Brooklyn Institute of Arts and Sciences, and which was carried on, in Italy, between the months of May and October, inclusive, of 1895. The general results of this investigation were summarized in the preliminary report, having the above-quoted title, under fourteen headings, and from these announcements we will now draw attention to the following, which were the first three in order of mention.

The first announcement related to vertical curves in mediæval church interiors: "The construction of the piers of many mediæval churches in a delicate curve, sometimes leaning into the nave, sometimes bending back from the nave, and in either case making a delicate return curve to the arch of the vaulting." The second heading announced the existence of "a refinement analogous to the last-named, and probably the original and earlier form of it," viz., the survival in the Middle Ages of the classic entasis.

The third heading mentions: "A refinement possibly or probably derived from the first-named, and frequently connected with it; a leaning outward and away from the nave of the nave piers, in phases grading from an exaggeration of the backward bend, and continuing the curve, to others in which the leaning backward, or spread, of the nave piers is in a straight line and not in a curve."

For the sake of brevity this arrangement will be described as the "widening" or the "widening refinement" in the later mentions of this paper. An account of the motives probably underlying this refinement has been given in Memoir No. 2 of the Brooklyn Museum Memoirs of Art and Archæology.\*

It was further mentioned in the preliminary report that careful attention had been given to the question whether accidental causes might not be a sufficient explanation of the phenomena, and that

\*The illustrations of this paper are from photographs of the Brooklyn Museum Surveys, of the series of 1903.

\*"The Architectural Refinements of St. Mark's at Venice," with 14 plans and 44 illustrations. Published by the Macmillan Company.

a negative answer to this question must be given. This question was also subsequently debated at considerable length in two of the following papers, which were respectively entitled, "A discovery of the entasis in mediæval Italian architecture," and "An echo from Evelyn's diary."

### Observations in Italy.

As far as Italy is concerned all possible scepticism as to the refinements just described was laid to rest in 1901. In the Summer of that year additional observations were made, of a wholly convincing character, which bore on the announcements just quoted. Other observations which had previously been a matter of personal assertion were corroborated by photographs and measurements. Finally, certificates regarding the constructive facts in the two most celebrated Romanesque buildings of Italy were obtained from the Italian engineering experts who were respectively in charge of the Pisa Cathedral and of St. Mark's at Venice.

A review of some 3,600 words in length, by Antonio Taramelli, accepting the statements which had been published on behalf of the Brooklyn Museum Surveys, had meantime appeared in *L'Arte*, the leading art journal of Italy (Vol. III. for 1900). A review accepting the announcements for St. Mark's at Venice was subsequently published by Alfredo Melani, in the *Gazetta di Venezia* for November 9, 1903. Personal letters, of an approving character, were also addressed to the author of the reports, by Giacomo Boni, the excavator of the Roman Forum, who has been at various times associated with the repairs of St. Mark's, by Francesco Saccardo, one of the authors of Ongania's publication for St. Mark's, by Professor Pompeo Molmenti, President of the Venetian Academy and a distinguished authority on the history of Venetian and Italian art; by Baron Henry De Geymüller, the distinguished German architectural authority, who has edited the most recent edition of Burekhardt's "Cicerone" for Italy, and by other experts of distinction.

Under these circumstances it is sufficient to say for the observations in Italy regarding vertical curves and bends, and the system of diverging piers, that they have so far included some twenty-one Italian churches and cathedrals, most of which have been illustrated in one or more publications, and especially in Memoir No. 2 of the Brooklyn Museum Memoirs of Art and Archæology.

Among these twenty-one churches it would be possible to single out a few in which the observations might not be regarded as wholly convincing, from the standpoint of an engineering expert, but the following list may be regarded as a list of impregnable cases from

the standpoint of the expert in construction: St. Mark's and S. Giorgio Maggiore at Venice; the Cathedral and S. Lorenzo, at Vicenza; S. Ambrogio and S. Eustorgio at Milan; S. Michele, at Pavia; Ss. Pietro e Paolo, Bologna; the Cathedral of Borgo San Donnino; the Cathedral and S. Paolo Ripa d'Arno, Pisa; Sta. Maria della Pieve, Arezzo; S. Agostino, Orvieto; and the Cathedral of Trani.

Before speaking of churches outside of Italy it is important to rehearse the evidence for constructive intention in the instances mentioned.

St. Mark's at Venice. Certificate from the engineering expert in charge of the church in 1901. Unanimous concurrence of other experts in Venice, as far as heard from. The widening of the nave (nearly 3 ft. in amount) would have caused the collapse of the church, if it had been accidental. The widening effect of the left aisle is managed by inclinations of engaged columns against a wall which has the north vestibule on its opposite side. The widening effect in the north vestibule is obtained (on the given side) by leans of engaged columns, which incline against the wall in the direction opposed to that of the engaged columns in the left aisle. In other words, engaged columns lean against the same wall in opposed directions on opposite sides. The inclinations by which the widening is effected in the side aisles are repeated in engaged pilasters facing the transept walls, which are not exposed to thrust or settlement. The east and west leans of the transept system are found in the engaged pilasters of the north and south end walls of the transepts. The engaged pilasters in the angles of both transepts repeat the leans called for by the general system of parallel treatment, at points where such leans could not be caused by thrust or settlement. The north and south leans of the end walls of the transepts (which are not subjected to any thrust), lean out to an amount (of over one foot in thirty feet) which would have caused the collapse of the adjacent arches, if these leans were accidental, whereas these arches are all perfectly true and in good condition.

S. Giorgio Maggiore at Venice. Aside from the widening of the nave, the refinement is systematically employed in the piers of chapels in the side aisles which are not exposed to thrust. The widening is not produced by an exaggerated entasis, because the same entasis is found on both sides of each aisle, whereas the widening lean is only found on each exterior side of the aisle.

S. Lorenzo, Vicenza. The widening of the side aisles is repeated in an outward lean of the exterior accessible wall, having buttresses of homogeneous and contemporaneous construction with exterior perpendicular faces.

S. Agostino, Orvieto. The inside widening is repeated in exterior outward leans of the side walls, while the buttresses, of homogeneous and contemporaneous construction, have faces which lean inward against the walls.

Vicenza Cathedral. The vertical curves are found in the pilasters of the chapel walls which face on the nave and which are 25 ft. deep.

S. Ambrogio, Milan. S. Eustorgio, Milan. S. Michele, Pavia. The widening is carried out in the aisles by leaning pilasters, which face chapel walls of considerable depth, and which are at right angles to the line of thrust.

Borgo San Donnino. The widening appears in the apse, in pilasters which are not exposed to thrust.

Ss. Pietro e Paolo, Bologna. The widening of the clerestory walls extends to the points at which they are interlocked in the end walls, and where they are not exposed to thrust.

Pisa Cathedral. Vertical curves in the piers at the crossing. Certificate for constructive facts from Signor Annibale Messerini, engineering expert in charge of the building.

S. Paolo Ripa d'Arno, Pisa. Vertical curves in engaged pilasters at the apse which are not exposed to thrust.

Sta. Maria della Pieve, Arezzo. The widening system is carried out so as to include engaged pilasters which are not exposed to thrust or settlement.

Cathedral of Trani. The widening of the nave piers at the transept crossing extends from the pavement up. The thrust of the arch is inconsiderable, and it thrusts against transept walls of considerable depth.\*

It may be frankly admitted that there is no impregnable constructive evidence to be offered for the following seven Italian churches: Cremona Cathedral (vertical bends bulging into the nave to the height of the aisle, with marked widening in the upper nave); Perugia Cathedral (piers leaning outward in straight lines from the pavement up); Arezzo Cathedral and Sta. Trinità, Florence (vertical curves); Siena Cathedral (ruined portion, vertical bends, doubtful case); Cathedral of Aosta (not personally examined); Capella Palatina, Palermo (widening of the apse comparatively insignificant).

The following list mentions a number of important Italian mediæval churches which were examined in 1895 (some of them re-examined in 1901), and in which the refinements of the widening, or of the vertical bends and curves, have not been so far observed: Venice, Churches of the Frari and of Ss. Giovanni e Paolo; Ravenna, S. Vitale; Ancona, S. Ciriaco; Bologna, S. Petronio; Padua,

\*All the buildings cited are represented by large photographs in the Brooklyn Museum exhibit, excepting Borgo San Donnino.

S. Antonio; Verona, the Cathedral and Sta. Anastasia; Milan, the Cathedral; Piacenza, the Cathedral; Modena, the Cathedral; Parma, the Cathedral; Florence, the Cathedral and Sta. Maria Novella; Lucca, the Cathedral; Assisi, the Cathedral; Siena, the Cathedral (completed portion); Rome, Sta. Maria Sopra Minerva.

The above list of negative results is confined to vaulted buildings, as the refinements in question would be unavailable in columnar basilicas, outside of the apse, unless they resembled the Pisa Cathedral and Trani Cathedral in having transepts with piers supporting arches which span the nave at the crossing.

It will be noticed that the observations in Italy for the refinements which are in question in this paper are very evenly balanced numerically, as regards positive and negative results.

As regards period there is no late Gothic church in Italy, and only one Renaissance church, which has so far been observed to show the given refinements. On the other hand, the list of observations with negative results includes several late Gothic examples.

If the negative results are compared with positive results for the Romanesque period, it appears that the positive results are obtained in several buildings of Romanesque period having great fame and distinction, such as St. Mark's at Venice; S. Ambrogio, Milan; S. Michele, Pavia, and the Pisa Cathedral. These may be contrasted with the less important Cathedrals of Modena, Parma and Piacenza, Padua and Ancona.

As regards buildings of distinctly Byzantine character, we have the splendid St. Mark's at Venice, on the positive side, as against the less important S. Vitale on the negative side.

The situation for Italy, as far as known, may then thus be summarized. No late Gothic examples of the particular refinements in question are so far known. Several early Gothic examples are known, among which Cremona Cathedral (if admitted as a constructive case) must be considered very important. The Romanesque churches giving positive results are more important buildings than those giving negative results. The most famous church in Italy is the only one known in Italy in which there are intersecting systems of vertical bents for both nave and transept. (In St. Mark's the details of the intersecting systems are elaborated with incredible ingenuity and persistence.)

The conclusions to be drawn from the above comparisons for Italy would be that the given refinements were gradually abandoned before or during the close of the Gothic period, and that they were introduced into Italy under Byzantine influence.

Observations which were undertaken in 1903 at Constantinople have confirmed the conclusion regarding Byzantine influence. Observations in France have much increased the list of early Gothic



cathedrals showing the given refinements, but they have not antagonized the conclusions regarding the later Gothic period.

### Observations at Constantinople.

It is the special object of the present paper to give an account of observations which were made at Constantinople and in Northern France, during the Summer of 1903, for vertical curves and bends and for the phenomenon of constructive divergence, or widening of mediæval interiors in the upward direction. These observations will be offered as far as possible in the shape of photographs, with comments and descriptive text relating directly to the photographs.

Fig. 1.—Balaban Aga Mesjid, Constantinople; an undated small Byzantine church, with apse showing an outward divergence, in the lines rising to the arch, of  $5\frac{1}{2}$  inches in a height of 12 ft.; width at the pavement, 7 ft. This is an inappreciable constructive demonstration for the use of the widening refinement. A short plumb-line hanging from a nail on the right side of the apse establishes the perpendicular. The surveyor's rod (6 ft. high), on the right, furnishes a scale of dimensions.

Fig. 2.—St. Mary Diaconissa, Constantinople; dating 509. View looking toward the entrance. The piers diverge in straight lines from the pavement up. There are plumb-lines on each pier (which are, however, not suspended for the entire height of the church). Surveyor's rod on the right (6 ft. high). It is apparent in this picture that a vaulting thrust could not have spread the piers in this fashion in straight lines beginning at the pavement. This case is palpably constructive. Height to the vaulting, 33 ft., widening at the arch, 16 inches; width at the pavement,  $25\frac{1}{2}$  ft.

Fig. 3.—St. Mary, Diaconissa, Constantinople. View looking toward the choir; showing vertical bends of a character which are palpably not due to thrust. Height to the springing of the vaulting, 33 ft.; amount of the bend on the right side, 11 inches. Total widening, something less than 22 inches.

This church has the plan of a Greek cross. The transept arms of the cross exhibit similar bends, which are transverse in direction to those illustrated, thus anticipating by four hundred years the arrangement found in St. Mark's at Venice.

Bends similar to those of St. Mary Diaconissa are found in Sta. Sophia, but permission to make photographs in this mosque could not be obtained. In the commercial photographs of Sta. Sophia the bends are concealed by the large shields, on which are inscribed the names of the companions of Mohammed, which are hung in the angles of the mosque. These bends could be photo-



FIG. 1. APSE, BALABAN AGA MESJID, CONSTANTINOPLE.



FIG. 2. ST. MARY DIACONISSA, CONSTANTINOPLE.



FIG. 3. ST. MARY DIACONISSA, CONSTANTINOPLE. FROM THE GALLERY, LOOKING TOWARD THE CHOIR.

graphed to great advantage from positions in the rear of the shields. Procopius, who wrote a description of the church in the 6th century, mentions that the building "rises from the ground, not in a straight line, but setting back somewhat obliquely."\*

The Brooklyn Museum exhibit of enlarged photographs includes another Byzantine church at Constantinople, the Church of the Monastery of the Chorah (11th-13th centuries), which is quoted by Fergusson and other authorities as having furnished the model for the primitive façade of St. Mark's at Venice. This church also has the plan of a Greek cross, and also has two widening systems which intersect one another. The marble casing of the interior is well preserved.

As measured at the choir, the outward bends result in a widening of 9 inches in a height of  $21\frac{1}{2}$  ft., with a width at the pavement of 20 ft. The outward bend is partly effected by the inclination and stepping back of four courses of marble panelling, which are directly under the half-dome of the apse. The constructive arrangement of these panel courses is clearly apparent in the excellent enlarged photograph of this church, which is on exhibition in Brooklyn.

The photographs made in Constantinople include fourteen from St. Mary Diaconissa, four from the Church of the Monastery of the Chorah, and three from the Balaban Aga Mesjid. They establish, beyond dispute or cavil, the use of the widening refinement, both with and without vertical bends, as having existed in Byzantine architecture as far back as the 6th century of the Christian Era.

The results indicated by observations in Italy, and especially in St. Mark's, are thus definitely confirmed.

#### J Observations in Northern France.

The following illustrations are selected from a large number of photographs which were made in Northern France in the Summer of 1903.

Fig. 4.—St. Jean at Caen. Two instances have been so far observed in France of the widening in late Gothic. One of these has been selected as an opening illustration for France, because it appears to show very successfully the artistic effect which was obtained and desired by the widening system. This effect is most easily appreciated in naves of relatively low proportions. In this church the system appears to be confined to the piers at the intersection of the nave and transept. By plumb from the gallery the second pier at the transept on the right was found to incline out-

\*See p. 25 of Lethaby and Swainson's work on *Sta. Sophia*.



FIG. 4. ST. JEAN, CAEN, FROM THE CHOIR.



ward  $5\frac{1}{2}$  inches in a height of  $35\frac{1}{2}$  ft. The entire amount of widening is thus about 10 inches.

Fig. 5.—Choir of the early Gothic Church of St. Loup, at Chalons. Although this view is confined to the choir, the widening system is found throughout the nave. The widening at this point amounts to 13 inches in a height of 32 ft. The width between piers is 24 ft.

This view illustrates, like Fig. 4, the relatively infrequent cases in which the piers of the nave diverge in straight lines, beginning at the pavement. Similar constructions were otherwise found, in 1903, only in St. Thomas at Strassburg and in the church of the Monastery of Montierneuf at Poitiers.\* Parallel cases in Italy, for piers diverging from the pavement up, are S. Ambrogio at Milan, the church of Sta. Maria della Pieve at Arezzo, and the Cathedral of Perugia.

The Curate of St. Loup gave the information that the architect in charge of the repairs of the church (M. Aubertin) is familiar with the constructive facts, and that he explained the system of construction as related to the feeling which designed the horse-shoe arch. The same suggestion of a feeling akin to that of the horse-shoe arch is found in the church of the Monastery of the Chorah at Constantinople.

Fig. 6.—The windows at the ends of the aisles of St. Loup at Chalons are built with mullions and exterior sides leaning off in lines which are parallel with the leaning piers. In Fig. 6 we see the window of the right aisle. The pier on the left is the one which is seen on the right in Fig. 5. A plumb-line is suspended from a nail on the right side of the window. (The pole by which the line has been raised to the nail is also leaning against it.) The pilaster to the right of the plumb-line leans off about 7 inches in 24 ft.

The motive of setting the window obliquely is obviously to avoid an over-conspicuous prominence of the primary leans, or to avoid such a contrast between perpendicular and leaning lines as would lead to the detection of the latter. Similar arrangements have been found in other French churches. The system of sustaining a parallelism of leans at all points where a perpendicular would conflict with them is carried out to a marvellous extent in St. Mark's at Venice, as shown by the plumbs which were published in *Memoir No. 2*.

The Brooklyn Museum exhibit includes two photographs for the left aisle of St. Loup.

The general system of the aisle arrangements in this church

\*The Museum exhibit includes an aisle view from St. Thomas at Strassburg, in which the leaning pilaster faces a chapel wall of great depth.



FIG. 5. THE CHOIR, ST. LOUP, CHALONS.



FIG. 6. THE RIGHT AISLE, ST. LOUP, CHALONS.



FIG. 7. THE LEFT AISLE, ST. ALPIN, CHALONS.

and the character of the constructive evidence which these arrangements offer is shown by the following illustration from another church in Chalons.

Fig. 7.—Left aisle of the early Gothic church of St. Alpin at Chalons. The plumb-line which hangs on the second pilaster records a lean of 4 inches in a height of 14 ft. This photograph is a very valuable one for constructive demonstration at a distance from the original monuments. By virtue of the small dimensions of the aisle the deflection is more than usually prominent, in relation to the size of the picture. The self-set task of furnishing obvious demonstrations within the limits of 5 x 7 prints, and even smaller reproductions, is a very difficult one when the average dimensions of the French cathedrals and the really inconspicuous character of these deflections are considered, and it is not often that such convincing pictures can be obtained, although the facts as observed in the churches themselves are frequently quite as convincing.

The picture is especially successful because the slant of the first pilaster happens to contrast in a very distinct manner with the adjacent perpendicular of the side of the photograph.

The fact that the masonry courses are all visibly horizontal is especially to be considered. If thrust or settlement had produced this deflection the masonry courses would dip downward to the left. The same horizontal arrangement of masonry courses is also found in the aisles of St. Loup, which otherwise resemble this view. The Museum exhibit includes a similar photograph for the right aisle of St. Alpin, and two photographs for the nave. The latter has a more delicate and less perceptible widening, but it is well defined notwithstanding. The divergence in the nave is connected with a bend.

Fig. 7 is obviously conclusive as to questions of settlement or thrust. There are three Italian churches from which constructive evidence of the same character has been published, i. e., churches in which there are chapel walls on the exterior side of each side aisle, which are opposed to the line of thrust, and of such depth as to make accidental movement of the masonry impossible. These churches are S. Ambrogio and S. Eustorgio, Milan, and S. Michele, Pavia, as previously mentioned.

Fig. 8.—The left aisle of Notre Dame, at Chalons. The plumb-line records an outward lean of  $3\frac{1}{4}$  inches in 15 ft. The masonry courses of the pilaster in its upper portion and the fillet under the capital are inclined downward to the left. If the wall had gone over accidentally they would incline downward to the right.

The great importance of this photograph lies in its illustration of a vertical curvature, which is uniform in all the pilasters. In face



FIG. 8. THE LEFT AISLE OF NOTRE DAME AT CHALONS.  
LOOKING TOWARD THE FAÇADE.



of this picture it is wholly impossible to deny that a vertical curvature analogous to the entasis and directly related to it was employed in mediæval Europe. A similar observation and a similar photograph have been made in Fiesole Cathedral. Other instances of the mediæval entasis have been quoted in Vol. VII., No. 1, of the Architectural Record. (One of these instances, quoted in 1897, must be withdrawn, viz., S. Miniato, at Florence. The observation was made in 1901 that the pillars of San Miniato are covered with a very deceptive Renaissance stucco, in imitation of green marble, although the church itself is early Romanesque.)

The illustration from Notre Dame at Chalons shows the importance of wide observations and of many of them. In face of this picture the hypothesis that the vertical curves in the naves of French Gothic cathedrals are derived from the classic entasis by way of Romanesque classic survivals or copies seems highly attractive. Much new light on this subject may be expected from a wider examination of the French Romanesque. The observations of 1903 in France were almost wholly confined to Gothic buildings.

The nave of Notre Dame at Chalons shows delicate vertical bends.\* The pilasters of the right aisle have the vertical curves, but do not incline outward. This is the only church so far found in Europe in which constructive leans are confined to one aisle. The explanation would naturally be found in a change of builders. The use of the widening in the aisles is not frequent, and it is clear that there were many builders who did not employ it in the aisles.

Fig. 9.—The Church of St. Quentin, from the choir. This photograph illustrates the most pronounced case of vertical curvature which has so far been found in Europe. At the piers on the choir side of the crossing the widening is 2 ft. (Width at the pavement 34 ft.) It is quite evident that the vaulting would have collapsed if such an outward spread had been due to accidental causes.

According to accounts given by the Sacristan, the recently deceased architect in charge of this church (M. Benard), who had presided over its repairs for thirty-six years, was well acquainted with the facts as being constructive, and attributed them to the *hardiesse* of the mediæval builders.

If any additional argument were needed it would be found in the arrangements connected with the system of vertical curves in the transepts, which intersects the system of the nave. This intersection is shown by the following illustrations.

Figs. 10, 11 (Church of St. Quentin), represent two adjacent

\*This statement corrects the one recently made regarding the nave of this church in Museum Memoir No. 4.



FIG. 9. THE CHURCH OF ST. QUENTIN. FROM THE CHOIR.

sides of the pier at the southwest intersection of the nave and transept. This pier is the farther pier on the left, at the transept, as seen in Fig. 9. The face which fronts the spectator in Fig. 9 is the eastern side of this pier, and this is also shown by Fig. 10. Fig. 11 shows the south side of the same pier as having curves which intersect at right angles those of Fig. 10. The curves of Fig. 11 belong to the transept system, which is transverse to that of the nave. The same arrangement of intersecting systems of bends has been mentioned as existing in St. Mark's, at Venice; in St. Mary Diaconissa, Constantinople, and in the Church of the Monastery of the Chorah at Constantinople.

It is obvious that these intersecting curves imply very intricate masonry cutting in the stones of the pier. The facts are uniform in all four piers at the crossing of nave and transept.

It is inconceivable that any builder or mason could inspect these intersecting curves as they are seen in this church and attribute them to thrust. If the facts represented by these two photographs are perfectly understood, and if they are understood to be typical for all four piers at the crossing, it is not easy to understand how any architect can question the existence of constructive curves at St. Quentin. The facts are, however, already sufficiently apparent in Fig. 9. The curves and the widening are bound up together in this church. Both must be accepted or both must be rejected, and the only alternative here is to hold that a vaulting can spread 4½ ft. without collapsing.

The use of tie-rods may be noted in the nave (Fig. 9). I was not advised whether these were introduced before the time of M. Benard. The strengthening of the church by these rods was probably advisable, and it is extremely natural, in view of the great divergence of the nave piers, that this expedient should have been suggested at some time later than the original construction, possibly under the recent architect in charge.

Fig. 12 introduces another interesting feature of the Church of St. Quentin. The openings from the transept into the aisles are also constructed with a widening. Thus the nave piers bend slightly into the nave before they curve away from it higher up. This is seen in Fig. 9 as well as in Fig. 12.

On the other hand, Fig. 12 shows the vaulting-shaft on the left as bending slightly toward the perpendicular above the widening. The Brooklyn Museum exhibit includes four pictures in which these facts are found to be uniform. The return curve of the vaulting-shaft is more clearly seen in these other pictures than in the one here published. In this picture a portion of the vaulting-shaft is concealed.

A widening of the aisles in two directions is unusual. In the

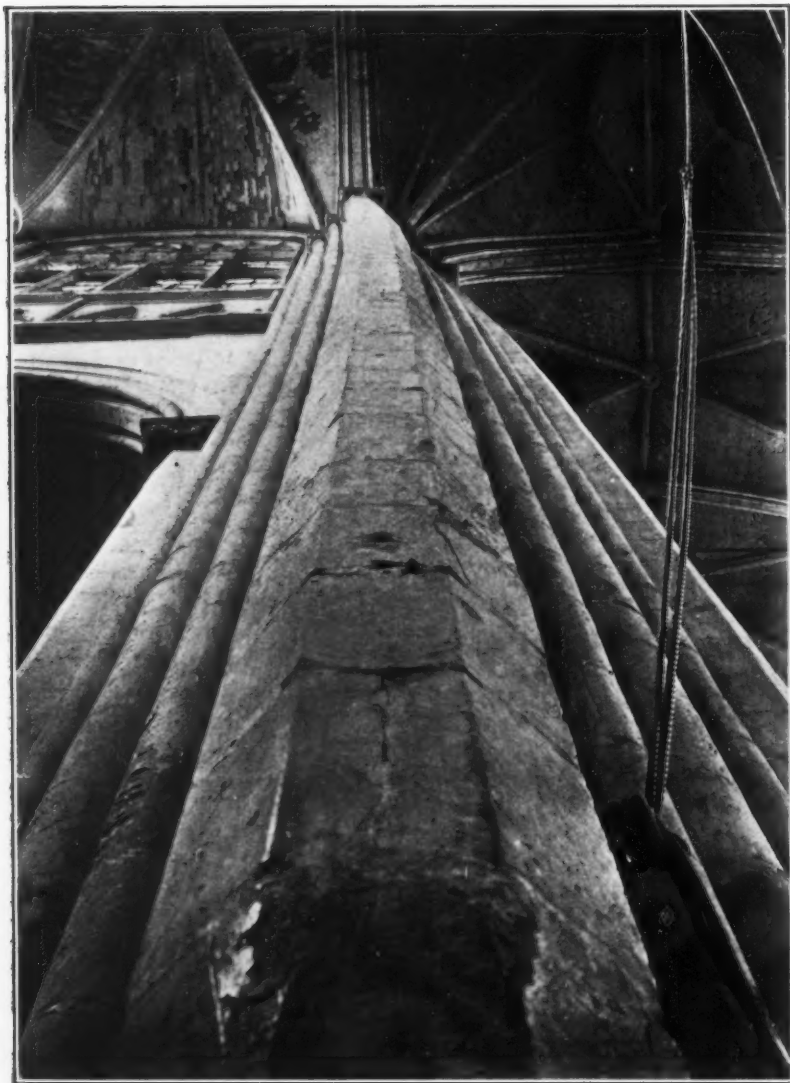


FIG. 10. THE CHURCH OF ST. QUENTIN. SOUTH-WEST CROSSING  
PIER, EAST SIDE, LOOKING UP THE PIER FROM THE  
GROUND TO THE ROOF.

(To see this picture correctly, hold it flat above the eyes and view it looking upwards.)

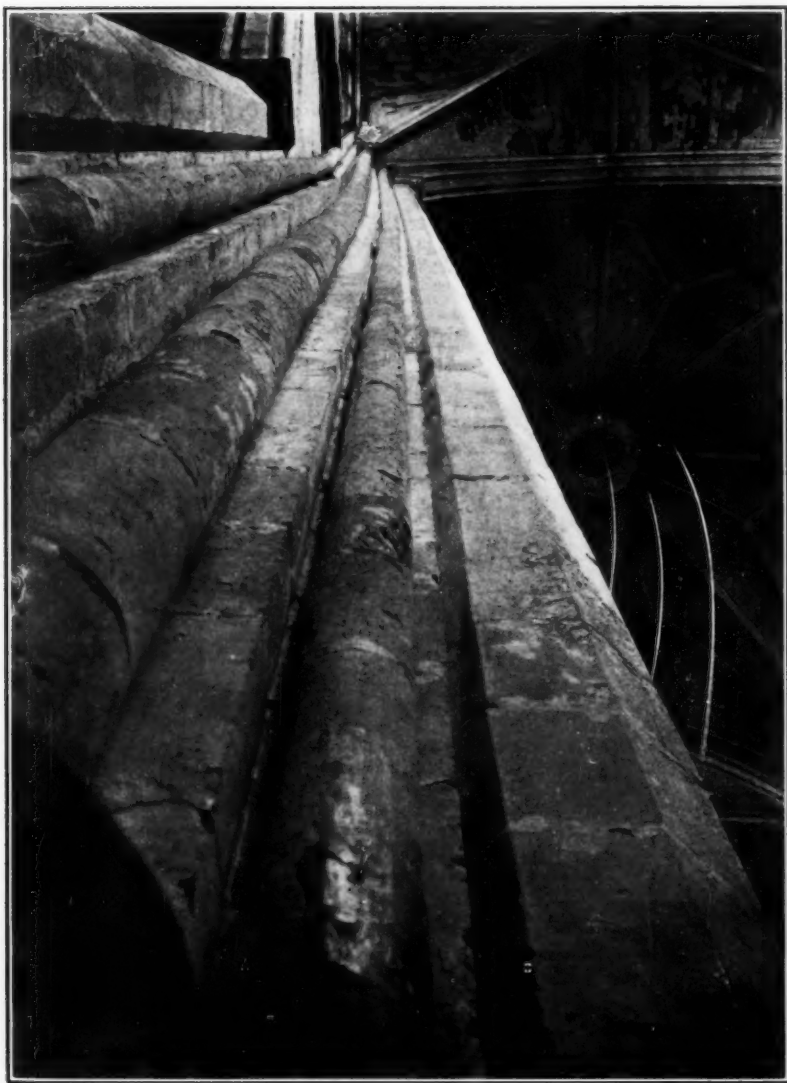


FIG. 11. THE CHURCH OF ST. QUENTIN. SOUTH-WEST CROSSING  
PIER, SOUTH SIDE, LOOKING UP.

(To see this picture correctly, hold it flat above the eyes and view it looking upwards.)



FIG. 12. THE CHURCH OF ST. QUENTIN, RIGHT AISLE. FROM THE CHOIR, LOOKING THROUGH THE TRANSEPT.



Italian churches which have been quoted for the aisle widening, the leans are only found on the exterior side, and this is also true of St. Loup and St. Alpin, at Chalons.

As regards the western portion of the Church of St. Quentin, it is in the opening from the transepts into the aisles rather than in the aisles themselves that the widening is found, but in the choir aisles the piers lean apart on both sides of the aisle. This is the explanation of the extraordinary and abrupt bends which may be noticed in Fig. 9 as existing in the choir. They are due to the fact that the piers lean into the choir as far as the capitals, whereas the vaulting-shafts and walls lean out above that point. The entire wall of the choir is twisted sideways, on both sides, in order to obtain the desired end.

It is a very frequent arrangement in French cathedrals that the widening is inconspicuous or wholly absent at the façade entrance, and that it gradually increases toward the choir. This fact may be observed in Fig. 9.

### Conclusion.

The continuation of this paper in the next issue of the *Architectural Record* will describe other French churches and cathedrals having similar refinements. The general result of the Brooklyn Institute observations of 1903 may, however, be briefly stated here. Twenty-seven localities were visited, including Constantinople, Vienna, Strassburg, and twenty-four towns in France. In these twenty-seven localities, thirty-one churches and cathedrals were found to exhibit vertical bends and curves or vertical widening. In most cases the two arrangements were combined.

It is believed that all the instances described and illustrated in this paper carry their own internal evidence of constructive intention to the eye of the expert, even in the limited dimensions necessary in these cuts. Not less remarkable constructive evidence will be published for other French cathedrals in the continuation of these papers.

It could hardly be demanded by the most exacting critic that impregnable constructive evidence should be furnished for every building cited or illustrated. From the standpoint of historic probability and historic criticism it would be incredible that even one case of architectural refinement could be demonstrated to have existed in the Middle Ages as an isolated example. The existence of other cases would be presumed, as a matter of course, even if they had not been seen. Why, then, be over-exacting of constructive proof for every case which has been seen? One instance absolutely proven would involve the certainty that a

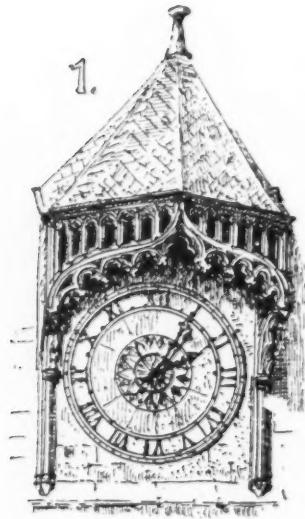
traditional practice of such refinements must have existed. And this is the only question which is at stake in this investigation.

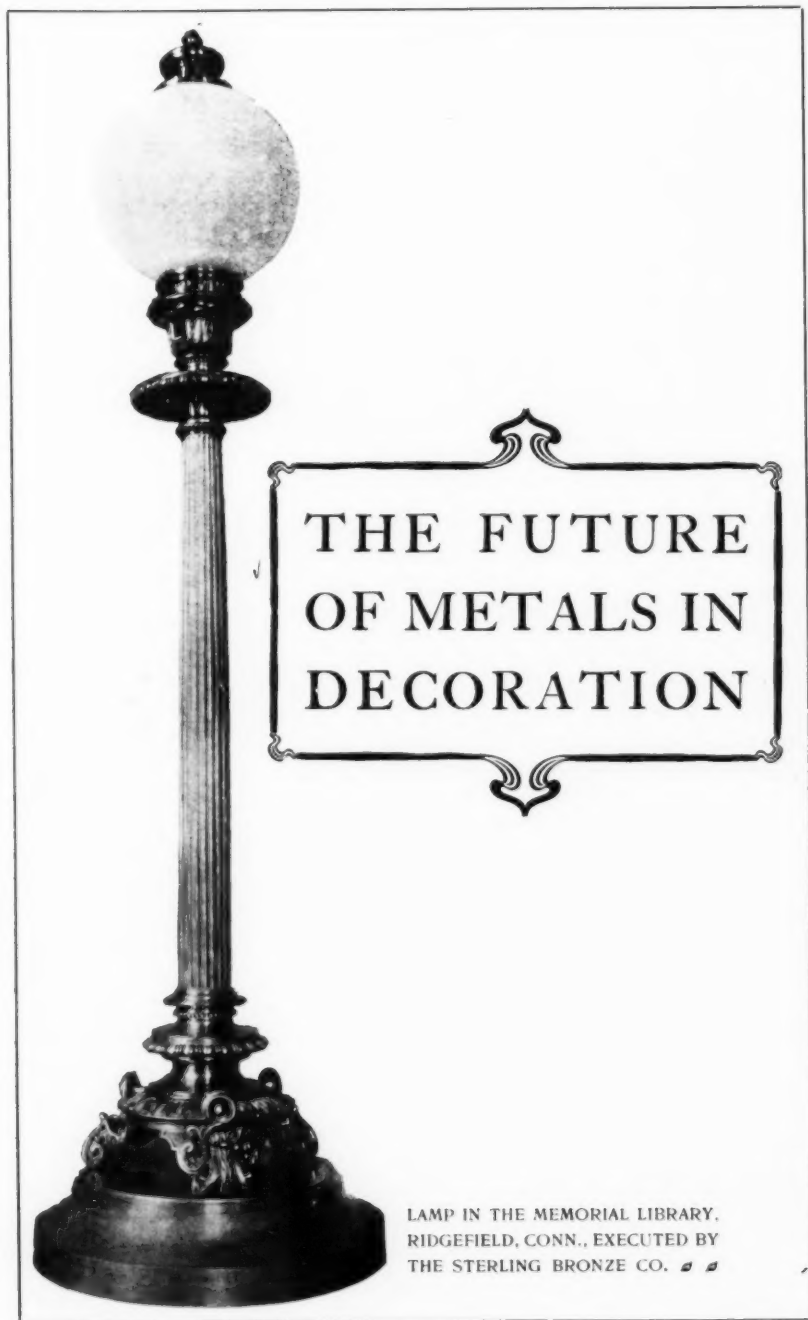
That deformations due to accidental causes are found in many mediæval buildings is beyond dispute, but a vague insistence on the existence of such accidental deformations will hardly be considered as overbalancing or obscuring the evidence now being presented.

*Wm. H. Goodyear.*

(To be continued.)

On p. 135, 25th line, read 2 ft. in place of  $4\frac{1}{2}$  ft.





THE FUTURE  
OF METALS IN  
DECORATION

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## THE FUTURE OF METALS IN DECORATION.

### III.

**I**RON is the material which has conquered our cities and in time will surely conquer the country, as the forests are destroyed for paper as well as the thousand and one other objects which have to be made of wood. It will then be cheaper to build barns and farm houses of iron in the United States, as it has always been in some parts of Australia. Very little has been done to study the capa-



OLD WROUGHT-IRON WORK, No. 27 EAST 20TH STREET, NEW YORK CITY.

bilities of iron either from the æsthetic side or the side of comfort. One may say that the field is still virgin, waiting for the inventive mind to subdue the metal to the finer uses of man. What we now have in the cities is not calculated to raise one's respect for anything but the mathematical mind that calculates weight and the resisting power of iron and masonry, also the strain of wind-pressure on enormous walls and on giddy miles of iron bridgework.

And even so, we have not absolutely guarded our iron buildings



EXAMPLE OF WROUGHT-IRON WORK.

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ELEVATOR ENCLOSURE.

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BRONZE DOORS—FIRST NATIONAL BANK OF SCRANTON, PA.  
Executed by the Gorham Manufacturing Co.



BRONZE STAIRWAY IN THE CHICAGO PUBLIC LIBRARY.

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LAMP, HOTEL BELLEVUE, BOSTON.

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BRONZE LAMP, U. S. MINT, PHILADELPHIA, PA.

By The Flour City Ornamental Iron Works

Jas. Knox Taylor, Supervising Architect.



LANTERN IN THE HOUSE OF RICHARD R. QUAY, SEWICKLEY, PA.  
Executed by the Sterling Bronze Co.





WROUGHT-IRON ELECTROLIER.

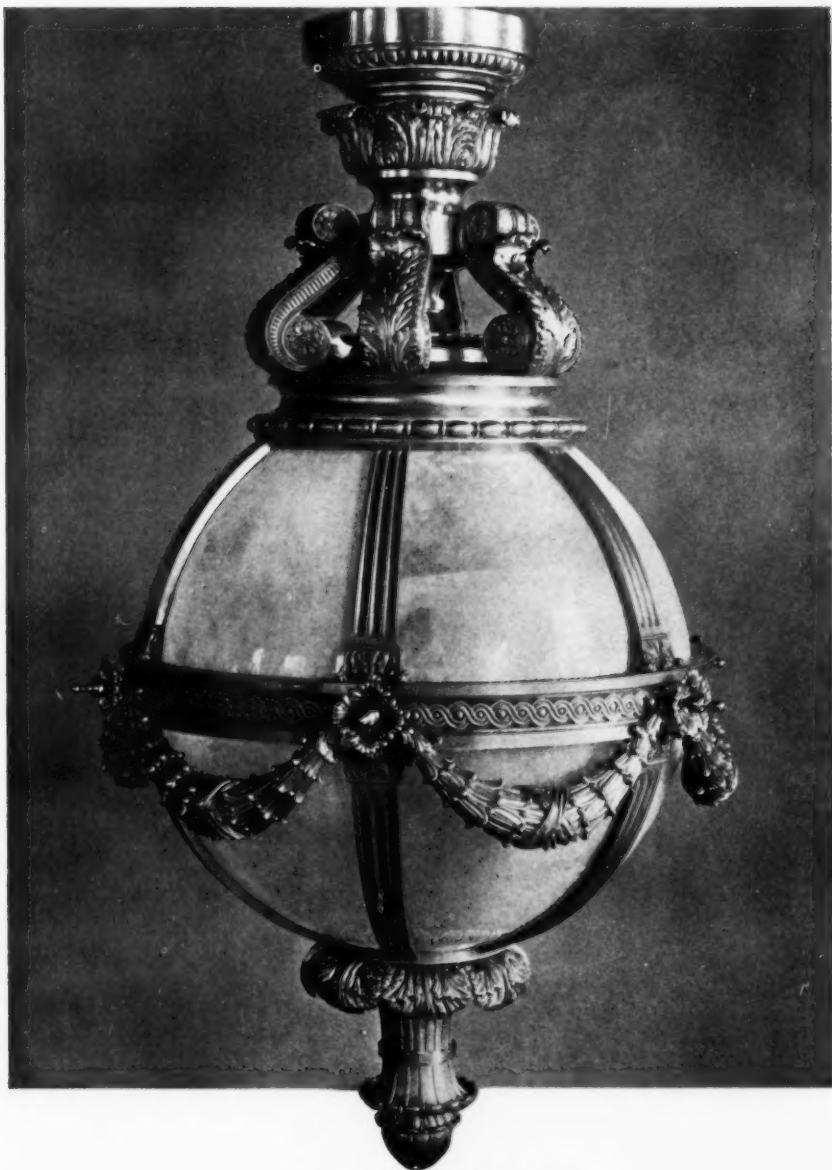
Executed by the Mitchell Vance Co.



BRONZE CHANDELIER.

Executed by the Mitchell Vance Co.

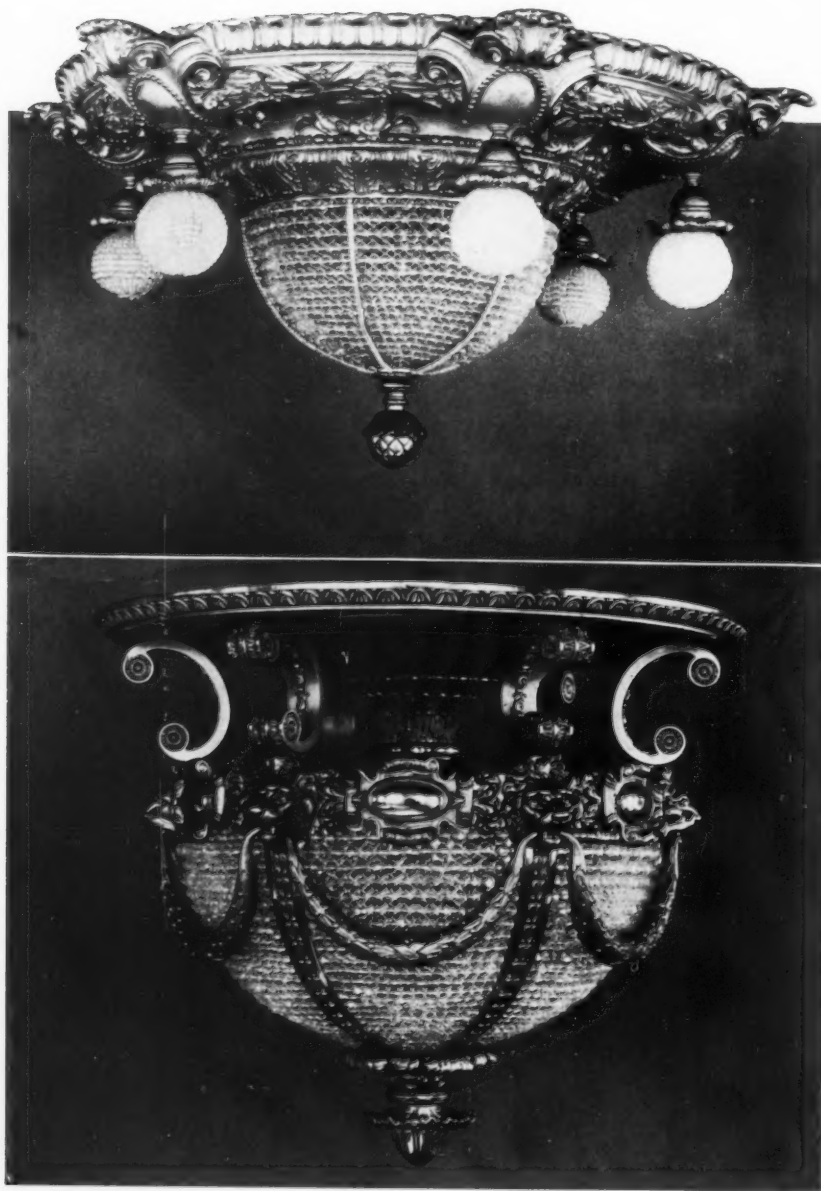
from corrosion. Even when carefully protected by earth or masonry or paint from the atmosphere, which otherwise will make short work of iron pillar and beam and bracket, the metal is not proof against the insidious attack of electricity, which slowly but surely destroys iron piping and must affect the great buildings which are penetrated in all directions by electric wires and affected by currents that escape from the heavy charges required to move our street cars. This, however, is not the place to consider dangers of electrolysis or calculate how soon our



BRONZE ELECTROLIER.

Executed by the Mitchell Vance Co.

enormously tall and heavy office buildings will last without expensive repairs. The greater number of them are so devoid of grace that their disappearance need not cause in anticipation much sorrow to anyone save him who will be injured in pocket thereby. What is of more immediate importance is this:



BRONZE ELECTROLIERS.

Executed by the Mitchell Vance Co.



BALCONY RAILING—THE UNIVERSITY CLUB, NEW YORK CITY.

Executed by the Hecla Iron Works.

McKim, Mead & White, Architects.



BRONZE MEMORIAL.

Executed by Chicago Ornamental Iron Works. Designed by Richard E. Smith.

A vast amount of money is spent in the fitting up of elevator shafts, offices and halls with iron and bronzework. No expense is stinted and yet the result is far from satisfactory. All we get is an impression of brute expenditure of money. If an architect can tell his client that the ironwork must be acknowledged artistic because this portion is copied from a certain model in Europe, and that portion from another, the client is proud, not remembering that for such sums as he is paying a fresh design from a living artist might be had. It is also in the interest of speed that the architect works by short cuts. The haste with which city buildings are erected causes many of the sins against beauty we see about us. It is impossible to finish such enormous structures with loving care in the period set for their completion. Instead of leaving certain parts for later on, when there is time to have designs made and these designs carried out by the most competent workers in iron and bronze, everything must be in place at a given date for good or for evil. In such conditions it is no wonder that architects set a dozen draftsmen to work getting designs from any available quarter, with small regard to the appropriateness of the models selected or the source from which they are conveyed. The impression of lavishness in decorations which first meets one gives way to doubt and one grieves to recognize the costliness of the



work on perceiving that the sums expended have gone into channels which are of no use in fostering American art.

Along with the steady increase of metal in construction there must come a more thoroughgoing use of metal in decoration. The new building of the Knickerbocker Trust Co., on Fifth avenue, New York City, offers an example of metallic sheathing on jambs and window frames. There is a liberal use of metal treated so as to appear like bronze already oxidized to a fine green tone in the decorative grillage over the large windows. The most striking example of the employment of bronze is afforded by Senator Clark's house, where the dormer windows and the corners of the roof are big single castings of bronze. We have suffered in this country from the false cornices and false eaves made of thin sheet metal painted to represent brownstone, but here we have bronze used as bronze and employed for some of the most prominent parts of the edifice, corresponding with bronze doors and iron entrance gates, and like them executed with the greatest care from models of full size. So far as the writer is aware this is the first time that the metal has been used on such a scale for the exterior of a mansion. It seems to indicate that as time goes on we shall have bronze employed more and more in the ornate portions of buildings where carved stone or terra cotta has been preferred. For the persistence of iron as the material for the skeleton of great buildings must entail the spread of metal work to the rest of the structure, as not only appropriate but more enduring and cheaper in the end. As to the artistic treatment of bronze, iron and other metals, on that side there is no trouble. What has alienated people of taste from metallic construction has been the unnecessary ugliness of forms and the clumsy way in which the new material has been handled by architects. Neither the Eiffel Tower nor the Machinery Palace at Paris, although an endeavor was made to produce beautiful results, was successful enough in that respect to satisfy those who demand a good deal in the way of art.

When it has been thoroughly understood that metal in decorative work is not to be employed for cheapness, and that it is as necessary to engage an artist to design metallic decorations for an interior as for a monument, then we may see a much wider field open to the craftsman in brass, bronze, iron and costlier metals—friezes in galleries, floors and ceilings, wainscots and furniture—just as we find to be already the case to a large extent in museums, libraries and public buildings where everything is done to minimize flammable materials. When one examines the results of an artist's labors in small pieces, entirely or in part fashioned from metal, such as the work of the old Bavarian forge masters and

the cabinetmakers in France during the reigns of Louis XIV. and Louis XV., one realizes that metals can be as readily made to serve the purposes of usefulness and beauty as any other material. They are not meant to imitate stone or terra cotta or wood, although for doing that there is abundant precedent in the past. But they can be managed in their own several ways so as to effect as fine results, produce as completely a satisfaction of the æsthetic sense and add the extra touch of durability to their value as works of art. It would not be unreasonable to make a forecast of the future to the effect that the present century will see a return, on a much grander scale, to something like those interiors decorated in precious and semi-precious metals which we find described by the early poets of Europe.

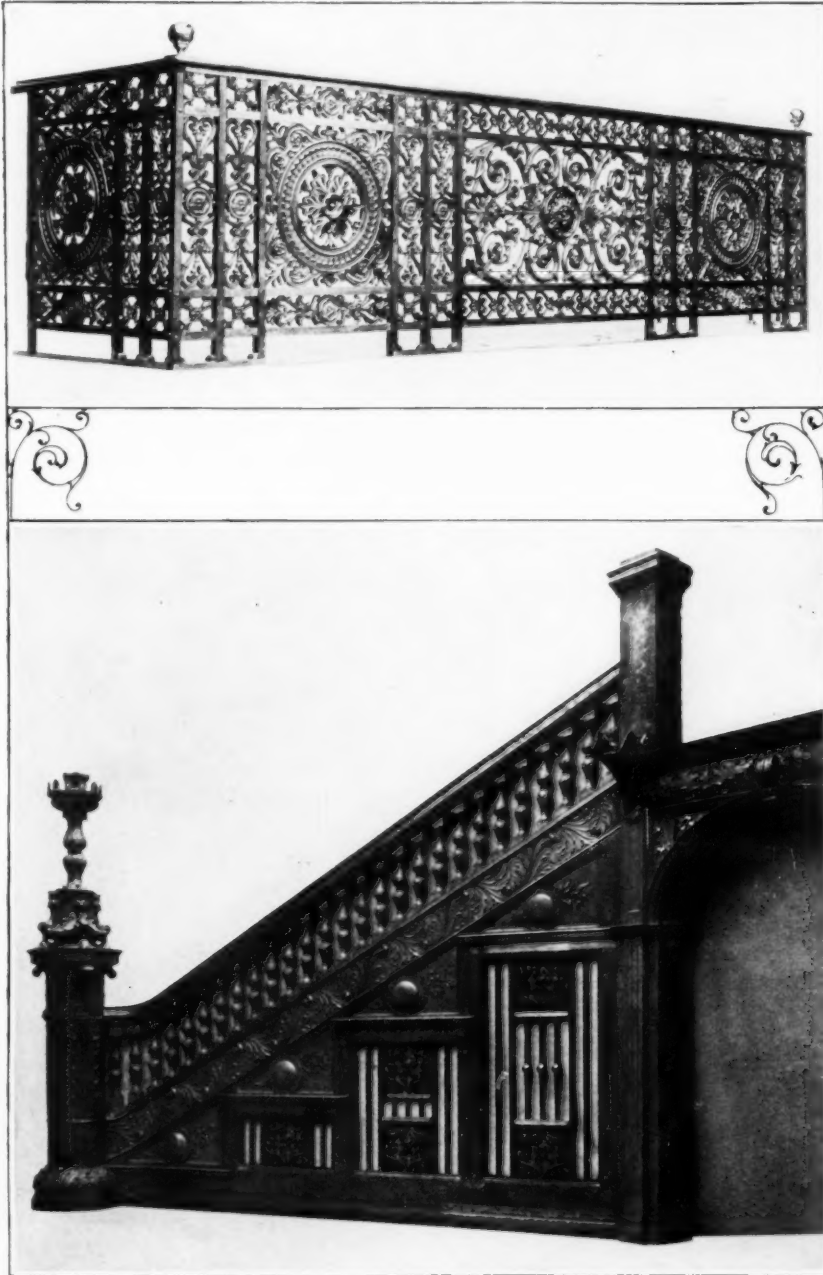
*Charles de Kay.*



BRONZE STAIR RAILING IN FLAGLER RESIDENCE, PALM BEACH.

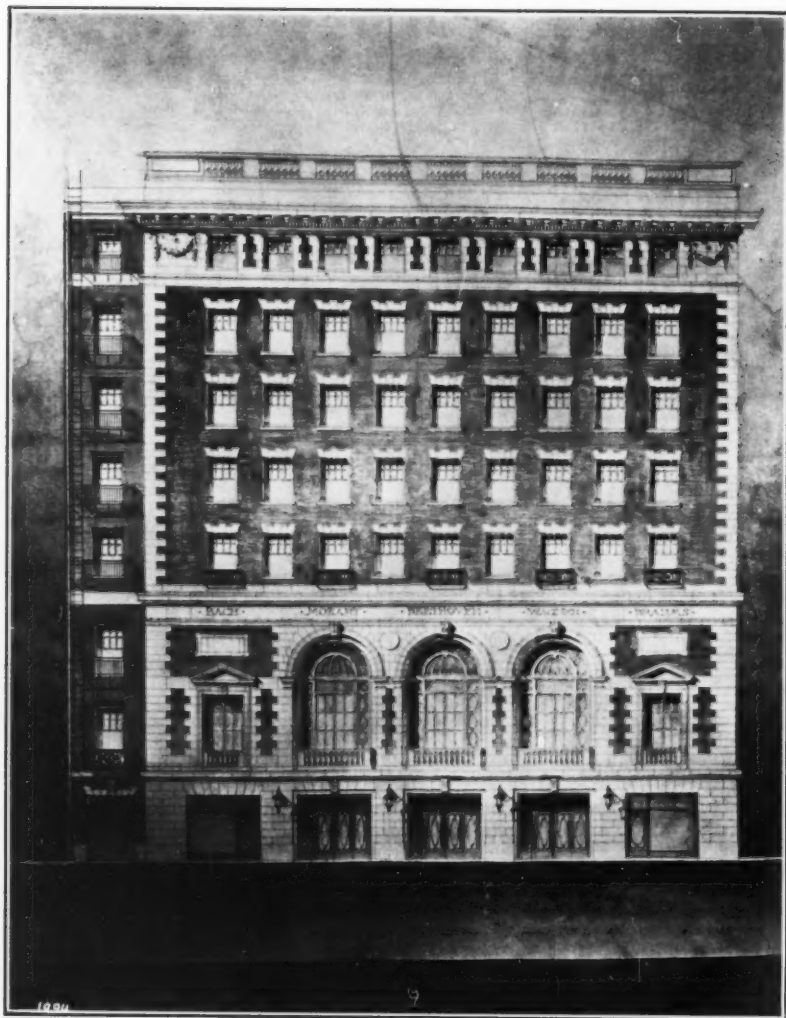
Executed by William H. Jackson Co.

Carrère & Hastings, Architects.



(1) CAST-IRON ELECTRO-PLATED BALCONY IN BOSTON PUBLIC LIBRARY,  
BOSTON, MASS. McKim, Mead & White, Architects.

(2) ALUMINUM BRONZE STAIRCASE, COLORADO STATE HOUSE, DENVER, COL.  
Executed by The Sneed & Co. Iron Works.



THE NEW THOMAS MUSIC HALL.

Chicago, Ills.

D. H. Burnham & Co., Architects.

## THE NEW THOMAS MUSIC HALL.

*Editor Architectural Record:*

It was my destiny to be in Chicago in April, 1904, and it was during the few days of my stay that the drawings for the new Thomas Music Hall were taking their final shape. The very energetic and enthusiastic services of a few managers had brought the business to the front in a way surprising even to the people of Chicago. And yet Chicago (which ought to be called, from now on, Thomas-ton) has for its chief glory, as you and I understand glory, the willing welcome which the town has given to that unmatched orchestra and to the man who has created and developed it.

Now, the triumphant establishment of that orchestra and its series of concerts is marked by the completion of the plans and the satisfactory filling of the subscription list. The building will be built; so much seems to be assured. That it will be ideally good in its plan, in its acoustic properties, in its fitness for the perfect rendering of great music, is apparently as certain as anything human can be. All that care on the part of Theodore Thomas and his allies can do has been done and is still in the way of being done in the preparation of the interior. Every curve and every straight line, each flat and each hollow surface have been considered and reconsidered; and while we have not yet the completed drawings of the interior, that is merely because no amount of pains and time have been begrudged, and no part of the interior is to be pronounced complete in scheme until the same can be said of every other detail in the whole complicated lay-out of the interior surface. If you want your Music Hall to respond like the shell of a violin to every note; if you ask that it shall be resonant enough and not too resonant; if you demand that the material of every part and the exact shape given to that material is settled by a long process of elimination and the rejection of every conceivable second-best, you will find that not weeks, but months of time—months stretching into years—will be consumed before your Music Hall stands perfected, even on paper.

There is still another part of the building to be considered, and that part, now, may be called complete in its preparation. Although you cannot publish at once the drawings of the interior in such fulness that the new Music Hall will stand out plain on paper, as it will be by and by in brick and iron, yet the front on Michigan avenue may be understood. The building of the hall for musicians and hearers has, of course, nothing piled upon it. It is roofed with its own roof—no ten-story building, nor the heavy substructure

ture for it, is to interfere with the faultless interior which Mr. Thomas and his friends are hoping to give to Chicago. But between the Music Hall proper and the street-line there is a space which, on the ground floor, will be devoted to ticket offices and entrances to the hall itself; which, on the first upper floor, will be occupied by a "foyer" and such-like reception rooms and rooms of resort; which, on all the stories above the great foyer, will be occupied by offices one row deep, fronting on Michigan avenue and the Lake, with a corridor running past them on the western side. That is all, and the picture which you will publish with these few words of introduction shows the façade of that shallow, thin office building—a piece of real estate investment, of course, the income of which, it is hoped, will help the Music Hall to prosper as a permanent institution.

The front had been studied many times over before I first entered Mr. Burnham's office, and what I saw there, the same elevation which is now in hand, was the result of very considerable preparation and of many rejected schemes. It is one of those frequent cases in which the simple and obvious, and therefore probably the best scheme, was slow to evolve itself. A good friend and a truly critical judge of architecture calls this front commonplace, and I am compelled to recognize some ground for such an opinion; and yet my own feeling about the front is what it was two months ago, and I hope to give your readers a sufficient explanation of my admiration for the design.

When I was a young man there was a term much in favor among the builder-architects, the contractor-architects, the real-estate-agent-architects and the like—a term which was intended by them to be opprobrious, as applied to those few rivals in the profession who were supposed to be more careful than was thought reasonable about the beauty and fitness of their designs. If a man spent much time over his designs and was exacting about his details, and if, when the building had begun, he insisted upon the precise carrying out by the contractor of the terms of his rather elaborate and minute specifications, he became unpopular, he was a marked man, he was a person whom the builders were shy of, and he was called "a fancy architect." Now, Mr. Burnham is not a fancy architect. More than any other man of the time he has apparently made it his business to ascertain just what the capitalist or the company will stand, in the way of exterior effect, and just what deference is to be paid to artistic considerations. So with the interior—Mr. Burnham's office is not one of those which force marble dadoes and mosaic floors upon its employers. In like manner, no one would dream of going to the Burnham *atelier* in the new Railway Exchange Building, to look for delicate designing,



which might involve long-continued and expensive workmanship to put into permanent shape.

And so the front which has finally come into being, at least on paper, is to be noted as probably as economical a piece of building, as rational a system of openings and solids, as the wish of man could devise. We are to take it for what it is—not as a costly work of art, created as a work of art and admittedly involving much expenditure of time and money as a work of art—we are to take it as an entirely reasonable design with nothing in it which could well be spared. A decent and somewhat elegant exterior was thought necessary, fronting on the most attractive avenue in the great town, and this it has been the architect's purpose and his pleasure to supply; but no one is to look to any front built under these conditions as a model of thoughtful designing.

So much premised, let us now see what there is really characteristic in the front before us. Remember that there is no architectural success like that design which grows, or seems to grow, out of the absolute requirements of the situation. The requirements of the present situation are these: a broad and ample hall for entrance and exit, which need not be high "between timbers," but which would be, almost of necessity, an extension inward of the sidewalk—the footway of Michigan avenue; above this, a grand story indeed, a *piano nobile* if there ever was one, an overwhelmingly important story of lofty rooms; and above this again five horizontal layers of small offices to be rented to the first comer. Those are the conditions.

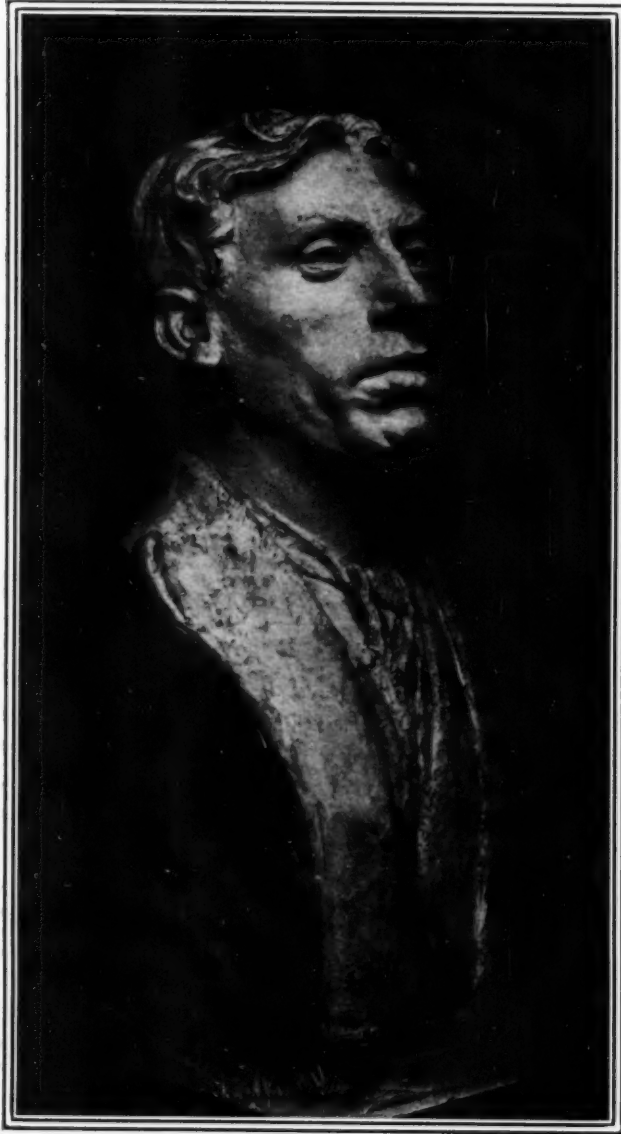
Now see how the well-advised designers went at their work. They treated together the low ground story and the lofty first story above, as one architectural basement, and to emphasize this unity they carried the jambs of the great arched windows straight down vertically, plumb to the sidewalk, so that each one of these three huge openings looks as if it were thirty feet high to the crown of the arch. There is no pretense about it. Most happily there was avoided here that ugly trick of making two stories of windows look like one window. The stories are separate and their division emphasized by flat arches on the wall surface; arches flush with the outer face of the building and not recessed between jambs, and above these are balconies with balustraded parapets; and yet the architectural treatment is such that the dignity of the three big arches is increased many-fold by this apparent extension downward of their vertical lines. This arcade of three immense arches is flanked by two very well composed classical windows with frontons, which windows are on the axes of two large openings in the ground floor, which may, perhaps,

be show windows of rooms for rent as shops. The five stories of windows above are, as they have need to be, all of the same size—for why should one office have bigger windows or different shaped windows from another? Logic says that they should be alike, and somehow designs made according to logic are very apt to be effective, very apt indeed to appeal to something in the human mind which is not altogether artistic feeling, but which is closely related thereunto. These windows are on the vertical axes of the openings below, and also, as far as practicable, on the axes of the piers which separate them; so much is called for by the exigencies of a semi-classical system of design and also by the rules of the more simple and obvious building of masonry walls. You may have a front made up of false bearings (structure in *porte à faux*) and a very good thing may be produced by that picturesque way of dealing with your front—but you will have trouble with it both in its design and its stability.

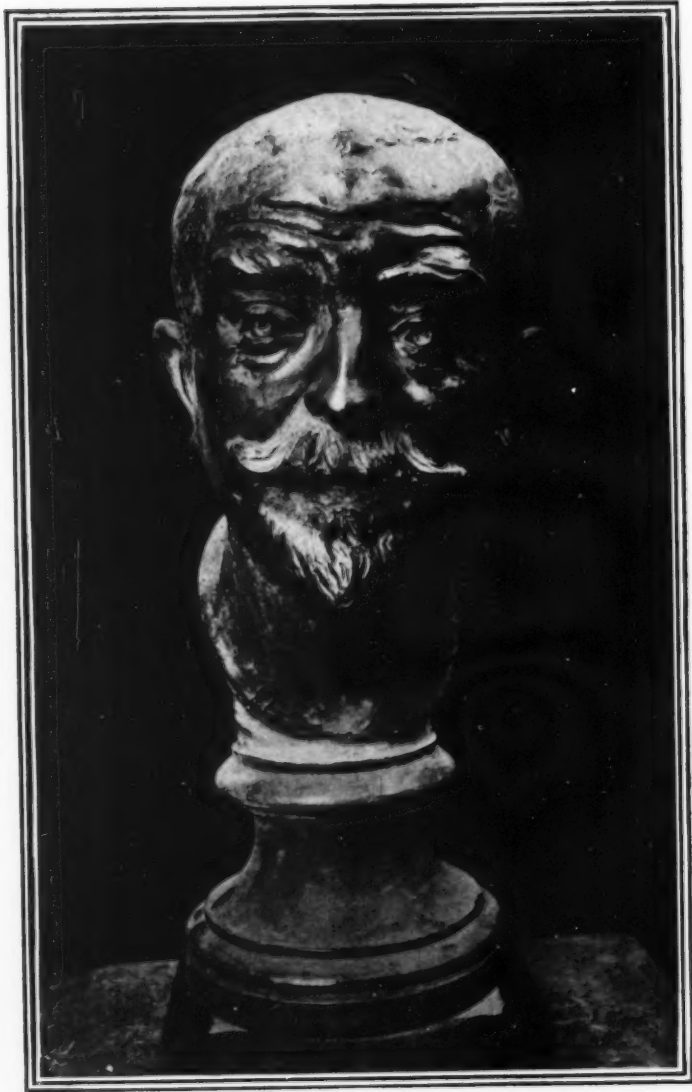
Further than this it is hardly necessary to go. The building is to be of brick with speckled, light gray granite much paler than the brick, and the design, once taken as classical in its main characteristics, has become an Old Colonial front without anyone's expecting it, as I think. It does not seem that we often meet in our streets large front walls, just as wide as they are high and pierced, as need is, with a multiplicity of windows, in which the general result has been so good. The front is most attractive to me, and I am the more glad of it that whenever one goes to Chicago to hear the best music that there is to be heard he will have a comely front to meet him as he approaches the temple of his delight.

Sincerely yours,

*Russell Sturgis.*



PORTRAIT BUST BY PIERRE ROCHE.



BUST OF HUYSMANS BY PIERRE ROCHE.